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28 June-4 July 1984 Vol 3 No 26

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★STAR
Ballooning on Dragon see page 10
GAME★

News Desk

Tandy and GEC to carve up Dragon

DRAGON is to be split up between GEC and Tandy, following the company's decision to call in the receiver four weeks ago.

GEC will continue to market Dragon's new Professional computer and will take over its manufacture and the development of Dragon's new up-market business micro. GEC is also going ahead with plans to acquire UK licence to produce an MSX standard home micro — to be launched at this year's *Personal Computer World* Show in the autumn.

Manufacture of the three GEC machines, which keep the Dragon name, will be moved to the South East.

Tandy then plans to take over support of the existing Dragon 36 and 64 machines. The company will also take over Dragon's range of software. Tandy will not however continue to manufacture the Dragon 32 and 64, commented Tandy's managing director, John Sayers, "We are definitely interested in the Dragon in terms of software support and service facilities to existing owners. But, although the Dragon and Tandy machines are very compatible, we are

continued on page 5

John Sayers of Tandy

Sinclair md defends the QL

SINCLAIR is planning an ambitious software publishing programme for the QL — over 50 titles before the end of the year.

Among the companies in discussions with Sinclair — as well as Psion — are Quicksilva, Melbourne House, Ultimate and Picturesque. The company is also talking with a number of American software companies including Digital Research, Microsoft, Lotus, Software Arts and Ashton Tate.

Sinclair's Nigel Searle

"Obviously this software isn't going to appear overnight — indeed the really good programs won't appear until early next year," said Sinclair managing director Nigel Searle. "The first QLs went out only seven weeks ago and the machine's processor is new to many of the houses involved."

Because of Sinclair's current pricing policy on blank microdrive cartridges (£3 each to the

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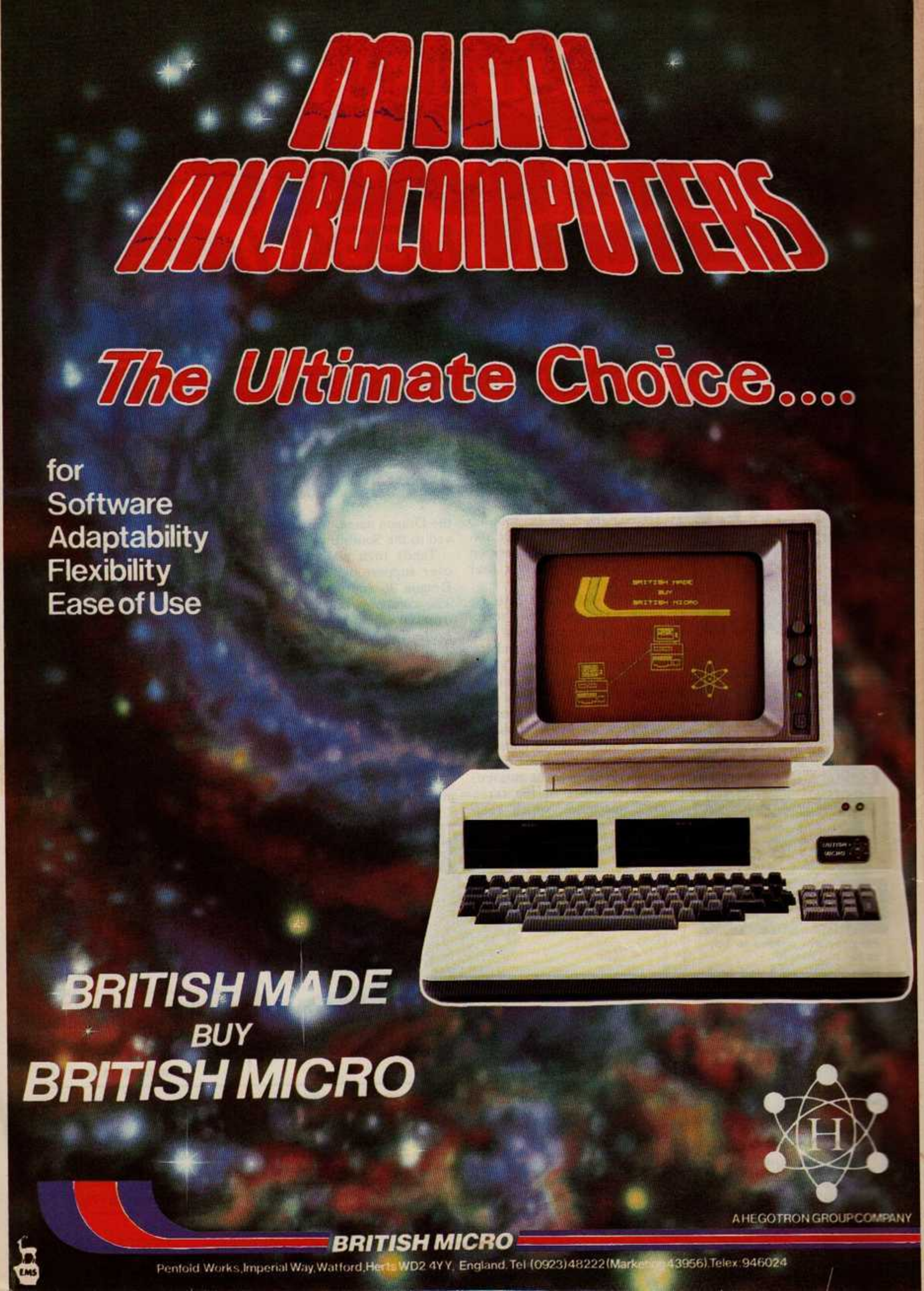
This Week

● **Street Life** *David Kelly talks to Chris Greet of Toshiba on page 12* ● **BBC & Electron** *Neil Barnes demonstrates a multi-purpose facility program on page 25.* ● **Commodore 64** *Simon Wallace with a sophisticated word processor program. See page 32.* ● **New Releases** *This week's selection includes* Figaro 64 *from Saxon Computing and* Look Sharp *from Mirrorsoft on page 52.*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Articles which are submitted for publication should not be more than 3,000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted.

Accuracy

Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

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Editorial

Choosing the processor chip for the machine is probably the most important decision a new micro manufacturer has to make. An already established chip must be chosen in order to stand any chance of attracting software support. And nothing kills a new micro faster than a lack of good software.

So far so good. But what happens when your first product has been a great success? What next? Look at what others have done. Apple, Sinclair, Acorn and Commodore. They all launched the same computer again only in a different form. So we have the Apple II, IIe and IIc. The ZX80, ZX81 and Spectrum. The Atom, BBC and Electron. And the Pets, Vic20, C64 and now the Plus/4 and C16. Even where the machines are not directly software compatible the manufacturers have made sure they have taken their existing software providers with them by keeping the same processor.

Yet this approach only works for so long. Existing chips are eclipsed by new advances in semiconductor technology and competitors begin to catch up. Then comes the crunch. Companies have to risk throwing everything away, in the hope of producing a 'new generation' of more powerful machines.

Apple was the first to take the plunge. After the 6502 Apple II, it went out on a limb to produce the the Lisa using the more advanced 68000 chip. For two years Apple's position was in question. Now we have the Mac and everything is rosy again.

In January Sinclair jumped. It had no choice — a Spectrum remake would have let in its competitors. If the QL somehow fails to be a huge success then the QL Mark 2 will be. Sinclair has made its move.

Now look at Commodore — it is playing safe. The Plus/4 is, to all intents and purposes, a new C64. And, like its predecessor, it will be very successful. But then what? Commodore will be deciding whether or not to jump in two year's time just when Sinclair will be gaining strength.

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QL defence

continued from page 1

software houses) initial software releases for the QL will not be cheap. "The houses we have so far signed contracts with are mostly writing packages which sell for around £40, so the price of the blank cartridge is less significant," said Searle.

"I wouldn't disagree that the current cartridge price is too high — the software houses all think so. But we have to balance supply and demand." At present Sinclair is producing over 100,000 cartridges a month but intends to increase production to over 40 million a year. Then Searle is confident the price will come down.

Also, Sinclair will soon announce the names of a number of independent software duplication companies which will manufacture Microdrive software.

The US version of the QL will go out with Microdrives although Nigel Searle did not completely rule out the possibility of fitting a disc drive. "Obviously we are not so arrogant a company that — if the QL were to be totally unsuccessful over there — we wouldn't scratch our heads and maybe put in a disk drive."

Searle is confident that the QL's troubles are now past: "In some respects we got off to a bad start with the QL — with its 'dongle' and production problems it was sometimes a little depressing. But while the press were jumping all over us we have been putting things right."

Topo slows down

ANDROBOT, the US robotics company has been forced to dramatically scale down production of its $1,500 *Topo* personal robot and delay the introduction of its two other devices, *Fred* and *Bob*, because of financial difficulties.

"The company had been looking for more venture capital to finance production of the new robot, *Fred*," explained Graham Daubney, developments director of Androbot's UK distributor's, Prism.

"Now Sysorex International, who already had an investment in Androbot, has made a further investment of $2m, and has taken a major shareholding in the company.

"Prior to the funding Androbot had decided to ship *Topo* on a much reduced scale. However, Prism still has a considerable stock of the devices, and we will certainly continue to provide Topo, on both rental and retail basis."

Fred was originally scheduled for the international market, but now Androbot is looking only to the US in January 1985, when it hopes to have produced 10,000–15,000 units. *Fred* is a $200 table-top 'robot' with turtle-like capabilities nicknamed a 'drawdroid' by Androbot.

Prism is now looking at the possibility of manufacturing Androbot robots in this country. "Although we are considering the idea, any decision depends on the technology first being available in the US. When *Fred* has actually been produced, we can start to look at the feasibility of manufacturing here more closely," said Graham Daubney.

Dragon carve-up

continued from page 1

not interested in the Dragon 32 and 64 *per se*."

Tandy is, however, interested in acquiring Dragon's assembly facility in Kenfig, South Wales. Advisors from Tandy UK's American parent company and its French manufacturing plant have visited the Welsh site and Tandy is believed to have made an offer for the plant to the Dragon receiver Touche Ross. Tandy would not confirm the bid though: "Our product manager in France has been to look at the assembly plant and, while it may be an attractive idea, it is only a possibility," said John Sayers.

New disc drive under £100

THE sub-£100 disk drive has arrived.

Manufactured by Radofin, a new device called the Quickdisc will soon be available for the Spectrum and Aquarius machines, with a Commodore 64 version to follow.

"It has always seemed incongruous to produce expensive disc drives for inexpensive machines," said Jackie Beaumont, spokeswoman for Radofin.

The drive is compatible with Hitachi maxell 3 inch diskettes and a twin unit will take two 100K formatted discs.

Radofin are currently looking for distributors in the UK and Europe to buy the rights to the product, which should be available in the autumn. The company already manufactures the Aquarius computer, the Mattel Intellivision and the Dragon cassette recorder.

Amstrad on time

AMSTRAD has joined Dragon in that select band of micro manufacturers who have got their machines into the shops when they originally planned.

Rumbelows on the Edgware Road in London has been the first store to take delivery of the Amstrad micro — with some 800 machines in stock.

Software is here too. Eighteen titles to kick off with from Gem, Romik, Mikrogen, Bourne, Softspot, Temptation and Britannia. All the titles are £7.99 except *Introduction to Basic* which is £19.99.

More US games come to UK

CHEETAHSOFT is the latest company to bring American software over to this country.

It has signed a deal with US software house Imagic to produce its games for the Spectrum.

"In terms of graphics and playability, Imagic's games are stunning," said Peter Hardingham, CheetahSoft's marketing director. "However, the games are only available on the Atari in the US and cost about £30. Our deal with Imagic allows us to market the programs at an average British price.

Two programs will initially be produced — *Moon Sweeper* and*Dragon Fire*, both arcade games. If they prove successful, CheetahSoft will release more games from Imagic's catalogue and also convert for Commodore 64.

The first two should be available in August, priced at £7.95.

Flight games?

RICHARD Branson's Virgin Atlantic budget airline which got off to a flying start last week, is looking at the possibility of providing computer games as in-flight entertainment for passengers.

"It won't actually be possible to provide a full range of games until we can fit a flat-screen tv on the back of passengers' seats," said Virgin's Nick Alexander.

"At the moment we are negotiating with the companies which produce hand-held games to use these. Transatlantic flights can be very boring, and arcade games, or even flight simulators would certainly help to pass the time."

No more A for Acorn

ACORN has formally announced its intention to discontinue sales of the model A BBC micro from September 1, 1984.

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* ZX81 Chart
Home Computing Weekly 21·2·84

Comments about the game from press and our customers

"FOOTBALL MANAGER is the best game I have yet seen on the Spectrum and my personal favourite of all the games on any micro ... To the ordinary person it is an excellent view of what can be done in the field of computer games ... The crowning glory of this game is the short set pieces of match highlights which show little stick men running around a pitch, shooting, defending and scoring ... It is a compulsive game but people who cannot take game sessions of 9 hours or so, which happened on one happy Sunday, will be grateful to know that there is a 'save to tape' option. FOOTBALL MANAGER has everything it could ... The originator, Addictive Games, certainly deserve the name." Rating: 19/20 (Practical Computing – August 1983).

"When I first received this game I spent the best part of the weekend playing it. Since then I have returned to it more often than any other. The truly addictive quality of this game is the remarkable way it mirrors the real football manager's problems ... "(Personal Computer Games – Summer 1983)

Programmers
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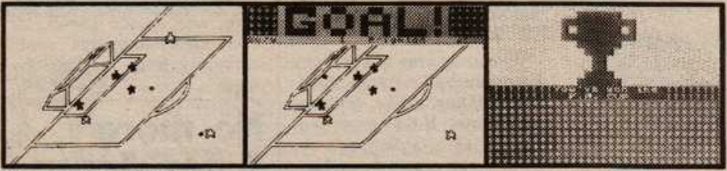

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Another Spectrum bug

Whoooopie, I've found a new bug on the ZX Spectrum.

Try this . . .
LET ANSWER=42:IF ANSWER IS FORTY THREE THEN PRINT "BUUUUUUG!"

Surprised? I was. In fact, you can have any old trash after the word *Answer* as long as it starts with a space, and the computer will still think it's the same variable. Try LET ANSWER BUG=ANSWER PLUS+12:PRINT ANSWER. I could go on and on about the rules for all this, but it's a lot more fun to discover them for yourself. Oh, and by the way, I haven't got a clue as to where or what the fault in the ROM is, so perhaps someone with Dr. Logan's ROM dissassembly could find it.

PS. Do I get a medal?

Julian Skidmore
25 Crossall Road
Trowell
Nottinghamshire NG9 3PG

A distorted picture

I read your publication every week, and up to now, I assumed that the content of your magazine would be fairly accurate.

But I must admit that I now have my doubts. I have been in the Consumer Electronics business all my working life (a mere 16 years) and although not in the computer field as such (hi-fi being my particular part of the industry) I do feel that I know possibly a little more than some of your readers.

I too returned from the CES last week, and I could not believe the rubbish that your David Kelly reported as *fact* regarding the show. I have been at CES regularly for the last 12 years, so I think I know possibly a little about the show. This year for the first time, I was exhibiting at the show with my U.S. principals. True we exhibited at the Conrad Hilton rather than McCormick Place but your report was so full of inaccuracies of a general nature that it must give your readers a totally distorted picture of the industry.

First, the show was not besieged with 100,000 visitors for the start on June 3rd. Total attendance at the 4 days was between 91,000 and 92,000 people. *Over 4 days, note.* All trade. Secondly, does not Radio Shack count in your carve-up of the computer market? Obviously known as Tandy in the UK, the range of Radio Shack computers is very highly respected in the USA and they do hold a large share of the market, if only by virtue of the fact that in some towns, they may be the only computer dealer around. I do not dispute your figure of 60% market penetration for Commodore, but I do think that you have ignored a large proportion of the market to arrive at a figure that suits the tone of your article.

The average wage of the Americans is $44,000. Come on. Where did you get that figure? The average wage in America is closer to $12,000. I can just see the lines outside the emigration department of the U.S. Embassy.

Why no mention of the fine effort made by British software houses? Good grief, I as a Britisher was complimented on the fine promotional idea of Virgin and Quicksilva in providing a double decker bus to take visitors from the hotels to the exhibits.

Finally, anti-Japanese feelings in America. You obviously do not understand the mentality of Madison Avenue. Comparative advertising in America is quite developed. For example, Pepsi-Cola compare their products with Coca-Cola. This does not mean that there is an anti-Coca-Cola feeling in America. It simply means that Pepsi are trying to draw customers away from the "market-leaders". The automobile manufacturers do the same. And as the consumer is buying Japanese compact cars, the comparison is made against Japanese imports. Hence the slogans "better than Japanese imports; fighting back against the Japanese." Oddly enough, as far as the trade is concerned in the USA (and I mean the whole electronics trade) computers are a commodity to be sold. The country of origin does not matter. The marketing is all important. Commodore are really good at that . . .

I do have a feeling that the average age of your readers is quite young. Equally well I think that their intelligence would probably be above average. Please do not insult the intelligence of your readership. David Kelly's article could have been written without ever leaving the U.K.

B Blank
Sota (UK)
41a The Grove
London N3

The attendance at the end of the second day was 92,118. Being a trade show, by far the majority will have registered on the first day. Radio Shack's (Tandy's) share of the US market has fallen over the last year and the company did not bother to exhibit at CES. Also, no independently produced software for the Tandy machines was shown by any of the other exhibitors. A recent survey of potential home computer buyers published in *Nation's Business* showed a medium household income of $53,007. The average US wage is much lower than this but the lower income households are not computer buyers. The UK software was covered in Part 2 of the report. The point about the Japanese MSX companies is that micros and software are fields in which the US (and the UK) has high hopes of being able to compete.

"Don't just stand there — do something"

Positively infuriating

I read your magazine regularly and find it most informative and interesting, but at the same time positively infuriating. The number of spelling mistakes is, quite frankly, appalling and this week's (Vol 3, No14) crop of 'independants' has finally driven me to write a letter.

Would you please de-bug your word processor and tell it that 'independant' is spelt independent.

H Fardesden
1 Manor Court
Breaston
Derby

***Polupar Copmuting* sets the stadnard the rest follow**

Help and information

As it now seems improbable that Pete Woods will ever resurrect the former "Dragon Dungeon" business, I would like to ask any of your readers who may have been subscribers to the Dungeon's "Dragon's Teeth" magazine if they would be interested in an attempt to reform as a (strictly non-commercial) User Group.

I doubt that we would be able to attempt anything as comprehensive or elaborate as the original, but I think that it could serve a useful purpose, if only on a help and information exchange basis.

Even with Dragon Data's lousy marketing methods, and some of the worst software any machine was ever cursed with, the old D.32 still survives as a good general purpose machine (as anyone who ever used one rather than reviewed one can confirm!); the 64 is just as good, but no one seems to want to know, so it's up to us!

If anyone is interested in trying to get something started, I'll be pleased to hear from them. . . .all ideas, help, and suggestions welcome.

Paul Grade
6 Navarino Road
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Ballooning

Land your balloon before Sam is copped for drunken driving in this game for Dragon 32 by Nicholas Edmunds

In this game you are the pilot of a balloon which you must land on a moving landing pad. This might seem straight forward enough, but your co-pilot Sam has been drinking and as the game progresses his driving gets worse.

So can you land your balloon before the cops cop Sam for drunken driving.

Using your right joystick you must guide your balloon down for a safe landing. If you overshoot, pressing the fire button drops your weight so you rise again, only to drop at a certain height again.

There are four levels to complete and after level 4 you start at level 1. The person who lands the quickest gets the high score which is printed on the screen along with the present level and score.

Program notes

80–1000	Dimension arrays
120–160	Ask for instructions
170–230	Set up routines
240–260	Play tune
280–530	Main game loop
540–670	Different levels
680–750	Crash
760–890	Cleared screen
900–1060	Hi score
1070–1120	Print routine
1130–1310	Set up screen
1320–1650	Graphics, scroll & letters
1660–2010	Data for letters & nums
2020–2360	Title screen
2370–2580	Instructions

Variables

Strings:

N$=Hi-score name
CH$=Letters & numbers
A$=Initial print string

Numeric:

N1&N2=ASC add numbers
Level=present level
S=Score
Hi=Hi-score
J=Joystick(0)
P=Fire button
X=X pos of balloon
Y=Y pos of balloon
XS=X pos of pad
YS=Y pos of pad
A=ASC code of A$

Graphics arrays:

BA=Balloon
S=Pad
C=Clouds
T=Trees

```
10 '*******************************
20 '**   B A L O O N I N G     **
30 '**   FOR THE DRAGON 32     **
40 '**         B Y             **
50 '**   NICHOLAS EDMUNDS.     **
60 '*******************************
70 'N.EDMUNDS 1984.
80 CLEAR 200,32000
90 PCLEAR6
100 DIM CH$(35)
110 DIM BA(30),T(8),S(20),C(10)
120 CLS2
130 PRINT@135,"INSTRUCTIONS(Y/N)";
140 O$=INKEY$:IF O$="" THEN 140
150 IF O$="Y"THEN GOSUB 2360
160 CLS3
170 PRINT@140,"balloons";
180 PRINT@123+60,"WRITTEN BY N.EDMUNDS 5/1/84";
190 GOSUB 1310'GRAPHICS.
200 GOSUB 1530'SCROLL LEFT.
210 GOSUB 1610'CHARS(LETTERS)
220 GOSUB 2010'TITLE SCREEN.
230 LEVEL=1'SET INITIAL LEVEL.
240 P$="O3L8DD#E04CP8D3E04CO3E04CCCCCP8CDD#ECDEP8D3BO4DP8CCCCCCO3DD#E04
CP8D3E04CP8D3E04CCCCCCP8D3A0F#A04CEP8DC03A04DDDD"
250 PLAY"T4;XP$;"
260 GOSUB 1120'SCREEN SET UP.
270 PMODE4,1:SCREEN1,1
280 YS=1
290 YS=160'INITIAL HEIGHT OF YS
290 WIND=-RND(3)
300 IF WIND=0 THEN 290
310 X=210:Y=RND(70)+50
320 XS=0
330 LET WEIGHT=2
340 TIMER=0
350 J=JOYSTK(0)
360 T=TIMER/60
370 P=PEEK(65280)AND1
380 IF WEIGHT<0 AND Y<50 THEN WEIGHT=2
390 IF WEIGHT=0 THEN WEIGHT=-1
400 IF P=0  AND WEIGHT>-2 THEN WE=WE-1
410 IF J<10  AND X>20 AND X<220 THEN  X=X+WIND-.5
420 IF J>50 AND X>20 AND X<220 THEN X=X+.5
430 IF J>10 AND J<50 AND X>20 AND X<220 THEN X=X+WIND
440 ON LEVEL GOSUB 540,570,600,630
450 IF X<20 THEN X=21 ELSE IF X>220 THEN X=215
460 XS=XS+C
470 IF Y+32>160 AND X>XS AND X+10<XS-15 THEN GOTO 750 ELSE
 070 'CHECK LAND. IF Y+32>180 THEN GOTO
480 PUT(XS,YS-5)-(XS+30,YS-10),S,PSET
490 PUT(X,Y)-(X+30,Y+32),BA,PSET
500 EXEC 32000
510 Y=Y+WEIGHT
520 GOTO 350
530 'DIFFERENT LEVELS.
```

```
540 IF XS<20 THEN C=2
550 IF XS>215 THEN C=-2
560 RETURN'LEVEL 1
570 IF XS<RND(200)+20 THEN C=2
580 IF XS>RND(200)+15 THEN C=-2
590 RETURN'LEVEL 2
600 IF XS<RND(200)+20 THEN C=4
610 IF XS>RND(200)+15 THEN C=-4
620 RETURN'LEVEL 3
630 IF XS<RND(200)+20 THEN C=4
640 IF XS>RND(200)+15 THEN C=-4
650 LET YS=RND(3)+100
660 RETURN'LEVEL 4
670 'CRASH SUBROUTINE.
680 N1=64:N2=9:A$="GAME OVER"
690 FOR P=1 TO 3
700 DRAW"S8;BM"+STR$(20+P)+",70"
710 GOSUB 1060
720 NEXT P
730 PLAY"L5T10;XP$;
742 GOSUB 900'HI-SCORE=LOWEST TIME.
750 'CLEARED.
760 FOR D=1 TO 1000:NEXT D
770 S=S+INT(T)'S=SCORE.
782 A$=STR$(S):N1=49:N2=0
790 LINE(35,0)-(90,10),PRESET,BF
800 DRAW"BM40,10"
810 GOSUB 1060'PRINT ROUTINE.
820 IF LEVEL<4 THEN LEVEL=LEVEL+1 ELSE LEVEL=1
830 LINE(0,120)-(255,170),PRESET,BF'PARTIAL SCREEN CLEAR.
840 LINE(220,0)-(255,10),PRESET,BF
850 A$=STR$(LEVEL)
860 N1=48:N2=0
870 DRAW"S4BM230,10":GOSUB 1070
880 GOTO 290
890 'HI-SCORE TABLE
900 IF S<HI OR S=HI THEN 910 ELSE CLS3:GOTO 2010'TITLE SCREEN.
910 'YOUR HI SCORE.-
920 SCREEN0'TEXT
930 CLS3
940 PRINT@65,"YOUR SCORE WAS-";S;
950 PRINT@65+64,"PLEASE ENTER YOUR NAME";
960 PRINT@65+128,"";:LINE INPUT N$
970 IF LEN(N$)>5 THEN 960
980 CLS:SCREEN1,0:LINE(90,0)-(120,20),PRESET,BF
990 LINE(90,0)-(120,20),PRESET,BF
1000 LET HI=S
1010 A$=N$
1020 N1=64:N2=9
1030 DRAW"BM90,10;S4"
1040 GOSUB 1060
1050 GOTO 220
1060 'PRINT A$="MESSAGE"
1070 FOR L=1 TO LEN(A$)
1080 A=ASC(MID$(A$,L,1))
1090 IF A=32 THEN DRAW"BR7" ELSE DRAW CH$(A-N1+N2)
1100 NEXT L
1110 RETURN
1120 DRAW"S4":PMODE4,1:PCLS:SCREEN1,1
1130 FOR P=1 TO 10:XR=RND(220):YR=RND(30)+15:PUT(XR,YR)-(XR+20,YR+10),
A,EE,D.
1140 FOR P=10 TO240 STEP 20:PUT(P,190-16)-(P+9,190+16),T,OR:NEXT
1150 A$="SCORE "
1160 N1=64:N2=9
1170 FOR P=1 TO 2
1180 DRAW"BM"+STR$(P)+",10":GOSUB 1060:NEXTP
1190 A$=" 0000":N1=48:N2=0
1200 DRAW"BM40,10"
1210 GOSUB 1060
1220 A$="HIGH"+"   "+N$+"     LEVEL "
1230 N1=64:N2=9
1240 FOR P=1 TO 2
1250 DRAW"BM"+STR$(90+P)+",10"
1260 GOSUB 1060
1270 NEXT P
1280 DRAW"BM230,10":A$=STR$(LEVEL)
1290 N1=48:N2=0:GOSUB 1060
1300 RETURN
1310 PMODE4,1:PCLS
1320 FOR R=1 TO 0 STEP -.4
1330 CIRCLE(128,150),7,5,R:NEXTR
1340 LINE(121,150)-(128,166),PSET
1350 LINE(135,150)-(128,166),PSET
1360 LINE(124,166)-(132,170),PSET,B
1370 GET(115,140)-(145,172),BA,G
1380 PCLS
1390 DRAW"BM100,100R2F4R6E4R2D8L18U8
1400 PAINT(101,101)
1410 GET(93,95)-(128,110),S,G
1420 FOR R=1 TO 16:READ A:POKE 1536+32*R,A:NEXT
1430 GET(0,0)-(8,16),T,G
1440 PCLS
1450 PCLS:FOR R=1 TO 8:READ A:POKE 1537+32*R,A:NEXT
1460 FOR R=1 TO 8:READ A:POKE 1538+32*R,A:NEXT
1470 GET(6,0)-(26,10),C,G
1480 PUT(100,100)-(120,110),C,PRESET
1490 RETURN 'SET UP.
1500 DATA 60,126,255,255,255,255,255,189
1510 DATA 24,24,24,24,24,24,24,60
1520 DATA 47,125,249,253,253,103,3,0,248,28,95,95,30,244,224,0
1530 'MACHINE CODE ROUTINES.
```

```
1540 'SCROLL
1550 FOR R=0 TO 82
1560 READ A$:POKE 32000+R,VAL("&H"+A$)
1570 NEXT R'SCROLL LEFT.
1580 RETURN
1590 DATA 10,8E,0,23,8E,08,20,A6,10,EE,11,EF,10,EE,13,EF,12,EE,15,EF
,14,EE,17,EF   16,EE,19,EF,18,EE,1B,EF,1A,EE,1D,EF,1C,EE,1F,EF,1E,EE,1
EF,C,EA,7 1600 DATA EF,84,EE,3,EF,2,EE,5,EF,4,EE,7,EF,6,EE,9,EF,8,
EE,B,EF, E7,E,47,F,30,89,20,31,3F,26,B5,39
1610 FOR R=0 TO 3F 1620 READ CH$(R) 1630 NEXT 1640 RETURN
1650 DATA "BU1U4E1R2F1D4G1L2H1BD1M+4,-6BD6BR3"
1660 DATA "BU5BR1E1D6NL1R1BM+4,-0"
1670 DATA "NR4U1BU3U1E1R2F1D1G1L1G2BM+7,-1"
1680 DATA "BU5E1R2F1D1G1NL2F1D1G1L2NH1BM+7,-0"
1690 DATA "BU3NR4M+3,-3D6BM+4,-0"
1700 DATA "BU4NR3U2R4BD2BL1F1D2G1L2H1BM+7,-1"
1710 DATA "BU6BR3NF1L2G1D2NR3D2F1R2E1U1H1BM+4,-3"
1720 DATA "U1BU5R4D1M-4,+4BM+7,+1"
1730 DATA "BU1U1E1R2E1U1H1L2G1D1F1R2F1D1G1L2H1BM+7,-1"
1740 DATA "BU1F1R2E1U4H1L2G1D1F1R3BM+3,+3"
1750 DATA "U5E1R2F1D3NL4D2BR3"
1760 DATA "U6R3F1D1G1NL3F1D1G1L3BR7"
1770 DATA "BU1U4E1R2F1BD4G1L2H1BR7BD1"
1780 DATA "R1U6NL1R2F1D4G1L2BR6"
1790 DATA "U3NR3U3R4BD6L4BR7"
1800 DATA "U3NR3U3R4BD6BR3"
1810 DATA "BU1U4E1R3BD4NL1D2L3H1BR7BD1"
1820 DATA "U3NR4U3BR4D6BR3"
1830 DATA "BU6BR1R1ND6R1BR1BD6BL1L2BR6"
1840 DATA "BU2D1F1R2E1U5BD6BR3"
1850 DATA "U6BR4M-4,-3M+4,+3BR3"
1860 DATA "NU6R4BR3"
1870 DATA "U6M+2,+3M+2,-3D6BR3"
1880 DATA "U6M+4,+6U6BD6BR3"
1890 DATA "U6R4D6L4BR7"
1900 DATA "U6R3F1D1G1L3D3BR7"
1910 DATA "BU1U4E1R2F1D4G1L2H1BE1BR1F2BR3"
1920 DATA "U6R3F1D1G1L3R1M+3,-3BR3"
1930 DATA "BU1F1R2E1U1BU3H1L2G1D1M+4,-2BR3BD2"
1940 DATA "BU6R2ND6R2BD6BR3"
1950 DATA "BU1U5BR4D5G1L2H1BD1BR7"
1960 DATA "BU6M+2,+6M+2,-6BD6BR3"
1970 DATA "U6BR4D6M-2,-2NU1M-2,+2BR7"
1980 DATA "U1M+4,-4U1BL4D1M+4,+4D1BR3"
1990 DATA "BR2U3M-2,-2U1BR4D1M-2,-2BD3BR5"
2000 DATA "BU6R4M-4,-6R4BR3"
2010 'TITLE SCREEN.
2020 PMODE3,1:COLOR1,2:PCLS
2030 C=1
2040 A$="BALOONS"
2050 N1=64:N2=9
2060 FOR P=1 TO 2
2070 IF C=1 THEN C=3 ELSE C=1
2080 COLOR C
2090 DRAW"S8;BM"+STR$(50+P)+",35"
2100 GOSUB 1060
2110 NEXT P
2120 COLOR 4
2130 LINE(45,20)-(150,40),PSET,B
2140 CIRCLE(20,30),10:PAINT(20,30),1,4
2150 LINE(30,30)-(45,30),PSET
2160 A$="BY"
2170 DRAW"BM110,70;C4"
2180 GOSUB 1060
2190 A$="NICHOLAS EDMUNDS"
2200 FOR P=1 TO 3
2210 DRAW"BM"+STR$(20+P)+",110;C4"
2220 GOSUB 1060
2230 NEXT P
2240 A$="PRESS FIRE BUTTON"
2250 FOR P=1 TO 2
2260 IF C=3 THEN C=1 ELSE C=3
2270 COLOR C
2280 DRAW"BM"+STR$(10+P)+",140"
2290 GOSUB 1060
2300 NEXT P 2310 PMODE4,1:SCREEN1,1
2320 P=PEEK(65280)AND1
2330 EXEC 32000
2340 IF P=0 THEN RETURN
2350 FOR D=1 TO 100:NEXTD:GOTO2320
2360 'INSTRUCTIONS.
2370 CLS5
2380 PRINT@5,"INSTRUCTIONS.";
2390 PRINT@64,"THE OBJECT OF THE GAME IS TO   ";
2400 PRINT@128,"LAND YOUR BALOON SAFELY ON THE  ";
2410 PRINT@128+64,"MOVING LANDING PAD.THIS MAY SEEM";
2420 PRINT@128+128,"SIMPLE BUT 'SAM',THE DRIVER OF  ";
2430 PRINT@256+64,"LANDING PAD HAS HAD A FEW JARS "
2440 PRINT@256+128,"AND THIS MAKES HIS DRIVING GET "
2450 PRINT@256+128+64,"WORSE AS THE GAME PROGRESSES.
2460 FOR D=1 TO 10000:NEXT D
2470 CLS 3
2480 PRINT@0,"TO GO UP PRESS FIRE AS THIS    ";
2490 PRINT@64,"DROPS YOUR WEIGHT SO THE BALOON ";
2500 PRINT@128,"RISES.THE IS ALSO A JARTING WIND";
2510 PRINT@128+64,"BLOWING TO THE LEFT,AS YOU CAN  ";
2520 PRINT@256,"SEE FROM THE DIRECTION OF THE   ";
2530 PRINT@256+64,"CLOUDS.THE JOYSTICK CONTROLS DIR";
2540 PRINT@256+128,"PRESS ANY KEY TO BEGIN THE GAME.";
2550 PRINT@256+128+15,"";
2560 EXEC 41194
2570 RETURN
```

Setting the standards

***David Kelly** talks to Toshiba's Chris Greet, founder of the UK MSX Working Group*

When the world's largest electronics companies club together in support of a particular design standard then everyone has to sit up and take notice.

So it is with home computers and MSX. MSX is intended by its Japanese supporters to become the world's first home computer design standard, and they will be putting a considerable effort into trying to achieve their goal. There will be no shortage of funds going into the plan. Just one of the eight companies involved — Toshiba — had a turn-over last year of over £7,100m. Their combined net sales dwarf UK companies like Sinclair or Acorn. Yet the Japanese companies are not computer specialists and they have turned to the US company Microsoft for their MSX design.

Every MSX micro uses the same internal circuitry and, as a result, software and peripherals produced for one machine will run with another.

Obviously, any standard has its problems. Having to maintain software compatability across a range of machines means there is little scope for change or future development.

But a standard does offer any computer user one fundamental advantage. There is no longer the problem of having to rely on one company to produce software and peripherals — all the MSX companies will be in competition with each other and MSX owners will be free to pick and choose their peripherals and software from any of the MSX manufacturers.

The system first went on sale in Japan in October last year. Thirteen Japanese companies now hold MSX 'licences', and MSX machines account for around 30 per cent of Japanese computer sales.

In many cases the MSX companies may sell more than one version of their machine. Toshiba, for example, sells two models — a 16K and a 64K model — both available in a choice of colours — "violent red or bearable black" according to Chris Greet. Chris Greet, Toshiba's UK product manager, is the man who set up the British MSX Working Group with the idea of bringing all the MSX manufacturers together to help co-ordinate the MSX launch in this country and encourage software development for the system.

"We want MSX to become a world standard in computers — like VHS in video," he says. Any company can manufacture an MSX machine providing it has an MSX licence. There is a licence fee and a commitment to meet the standard. There won't be an equivalent of ZX81, or for that matter Spectrum, cut-price MSX machines. There is a certain minimum specification — joystick ports, Rom slot, cassette interfaces and so on which each MSX machine must have.

"The hardware of each machine has to be basically the same — otherwise MSX would not be standard — but the idea is that companies will offer some things outside and in addition to the spec. If things go the same way as in Japan, Sanyo will offer its MSX micro with a built-in light pen. Yamaha, if it joins the UK MSX group, will sell its music keyboard and synthesiser.

"One of the rules of MSX is that any peripheral which carries the MSX logo will have to be compatible with all of the MSX machines. Anyone who buys a Toshiba disc unit, for example, can use it with any MSX machine.

"Toshiba, like the other Japanese electronics companies has been considering entering the home computer market for a number of years. MSX has given us that opportunity," says Chris. "We started to research the British market at the end of last year after MSX had been launched in Japan and then we reassessed its potential again in January when we set up the British MSX Working Group."

Software is just as important to the success of a machine as the hardware. "Whereas we are expert at producing consumer electronics, we have no expertise of software at all. It was essential that we were able to get the established software machine working for us in the UK — that was the reason for setting up the MSX Working Group."

The main aim of the Working Group is to establish MSX as the home computer standard. The group is made up of members from all the companies who have signed an MSX licence for the UK. Currently there are eight members — including Toshiba, JVC, Sanyo, Sony, Fujitsu and Canon with a number of other companies on the point of joining some of which are UK companies. "Since our hope is to establish MSX as the home computer standard for the UK, that tends to suggest that some existing manufacturers will join our camp.

"The biggest problem with any standard is obsolescence. There are lots of upward progressions in technology which can, and will, be taken," says Chris. "And software will remain upwardly compatible. Anyone writing a big program for any manufacturer like Commodore must be wondering if it will still be possible to sell that program in two year's time. If it is written for MSX the program may not be the best thing since sliced bread in two year's time — but it will still be possible to sell that product."

Yet it is very hard to see how — with such a rigid hardware standard as MSX — the design can be upgraded whilst maintaining compatibility. MSX's inventor Kay Nishi of Microsoft, Japan has suggested an eventual up-grade path to the 16-bit 8088/8086 family of microprocessors. In this case it is quite difficult to see how compatability can be maintained with software written for the present Z80 MSX standard. Chris, however, remained adamant: "MSX is not a one-day or one-year wonder — there is a future.

"I can't find anyone who doesn't gain by MSX. With continuing compatability it is obvious that software writers will concentrate more and produce more sophisticated programs, knowing that their programs will have long life. Also, the possibility of a world market must figure prominently in any author's mind." Chris is convinced that the quality of the software that is now being produced for MSX by British software houses will surprise a good many of MSX's critics.

"If you compare the specifications of MSX and the Spectrum then MSX with its TI video processor chip offering hardware sprites has the possibility of more sophisticated programming. Obviously, initially in September we will see copies of successful titles on the Spectrum and Commodore. But I would also expect to see a quickly growing number of entirely new titles which bring out the special facilities of the MSX machines.

So what is Toshiba planning for MSX? The company will launch a version of its HX-10 machine currently on sale in Japan. Only the 64K machine will come over — the 16K will be left back home. MSX will not be cheap. The 64K version will not be the most competitively priced micro on the market. Toshiba's machine will come in somewhere just under £300. A range of peripherals will be offered at launch to accompany the machine. It is in the area of peripherals that MSX will really come into its own — the music synthesisers, robots, hi-fi controllers, video recorder sub-titling machines.

Toshiba will offer an MSX disc drive, a dot-matrix printer, joysticks, and probably a printer/plotter. To follow will be a music keyboard and a robot.

"Toshiba are currently market leaders with MSX in Japan — this in one of the reasons we are likely to be more advanced with our plans for MSX in the UK."

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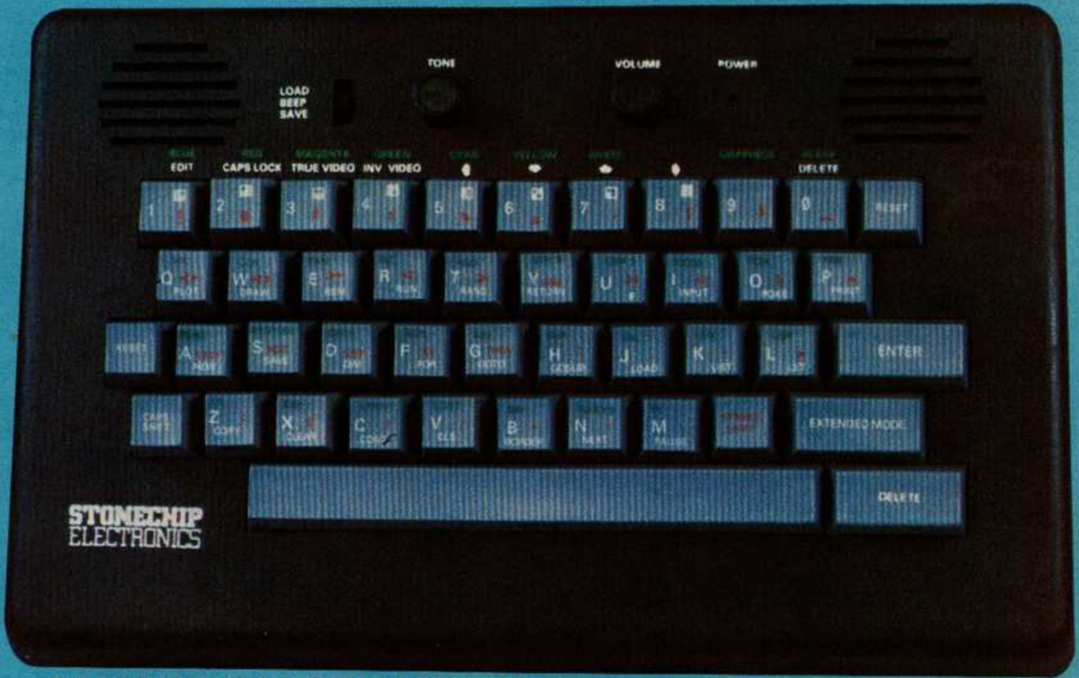

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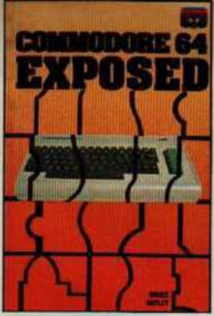
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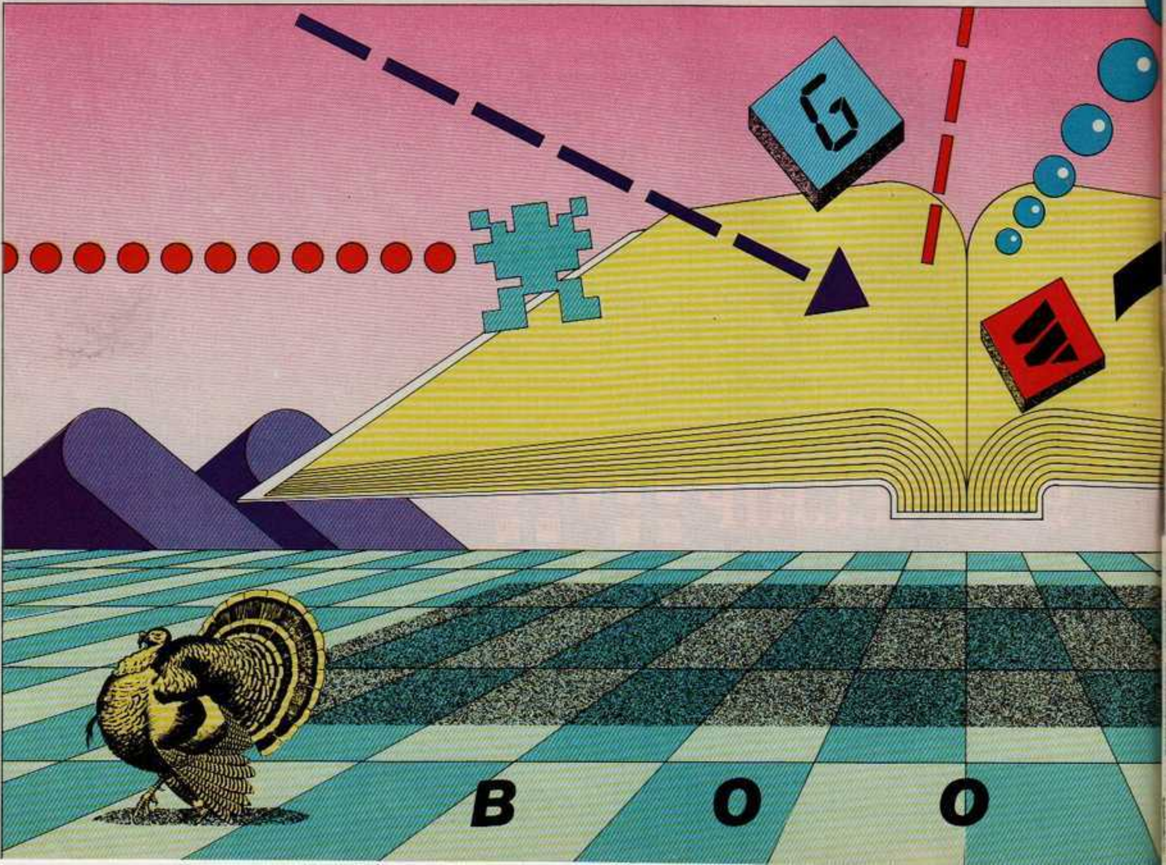
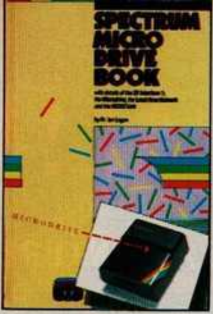
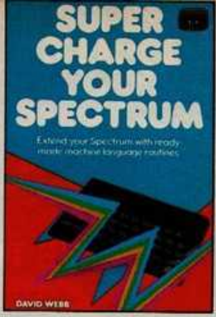




Spectrum Microdrive. In this book Dr. Ian Logan gives a detailed explanation of the Spectrum Microdrive — how it works, its capabilities from BASIC and Machine Language and the networking and RS232 possibilities.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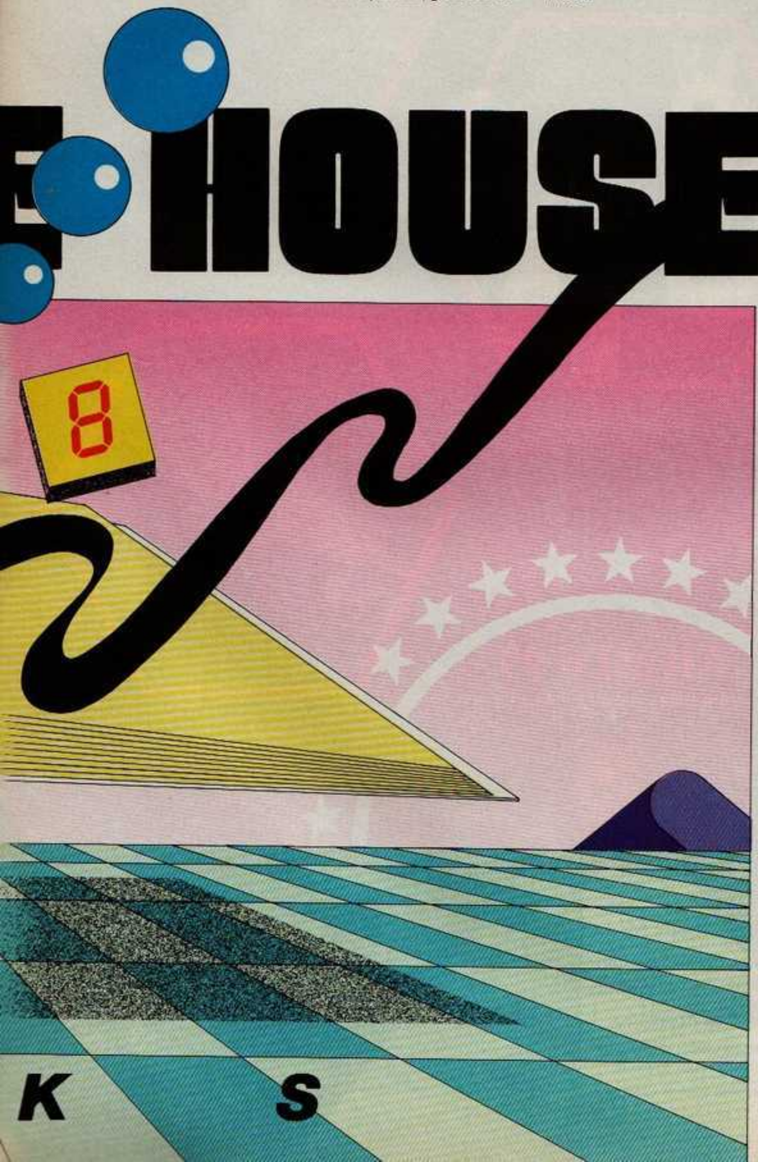

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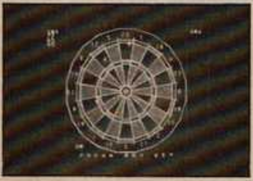
The wobble factor

Despite its recent success as a televised sport the essence of darts is to feel the weight of each dart, to enjoy its glorious trajectory — and maybe to down the odd pint between rounds.

So why bother to make a micro version of the game?



One immediate answer is to make it available to the handicapped. The darts can be controlled by five keys or by joysticks and it's one of the few programs around to offer the option of using one or two joysticks. That arrangement should allow quite easily for adapted controls.

It is a two-player game. You are offered three variations: 501, Round the Board and Cricket. Brief instructions explain the intricacies of each. A good representation of a board is drawn. You manoeuvre the dart to the right spot and fire, *but* it isn't that simple: each dart has a wobble factor that makes it very tricky to control. This "three pints down" effect may add realism for some and it is the making of the game.

Scoring is accurate and there is a rather nice burp noise when you hit metal or miss and a fanfare when you win. It gives you much of the game's fun, but none of the friendly atmosphere of your local.

Dave and Jan Watterson

Program *Darts* **Price** £5.70 **Micro** BBC 32K (OS 1.2) **Supplier** MRM Software, 17 Cross Coates Road, Grimsby, S. Humberside DN34 4QH.

Aggresive dinosaurs

Any attempt to classify *In The Beginning* under one of the standard computer games headings is doomed to failure — it contains elements of arcade action, puzzles, computerised board games and educational software, all within the same program.

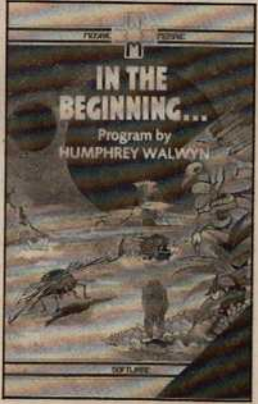
The game consists of ten levels depicting stages of the evolution of life on Earth. Starting from a single molecule you develop through various aquatic forms of life, through fish and reptiles, eventually to a primitive mammal. To progress through the game you have to collect survival points by achieving various goals which you are set, for example designing a good fish! At each stage of the game you must avoid assorted perils like predatory trilobites, hostile climates or aggressive dinosaurs. Falling prey to any of these will lose you points. If your points total falls to zero you join the dodo and become extinct.

The game is certainly original with plenty of explanatory text and reasonable graphics. However, it is difficult to be enthusiastic about it. The action is rather slow (it is all in Basic) and not all that challenging, so that once you have completed all ten stages there is not much incentive to have another go.

Faster and more lively graphics would have improved it a lot.

Richard Corfield

Program *In the Beginning* **Price** £6.90 Micro Commodore 64 **Supplier** Mosaic, John Wiley and Sons, Baffins Lane, Chichester, Sussex.



Daffy ducks

A couple of years ago, I spent much time, and money, playing an arcade game called *Carnival*. It was a fairly simple game, consisting of not much more than a fairground shooting gallery. But, for all its simplicity, it was extraordinarily addictive. There have been many attempts to emulate this arcade original, but even that great games machine, the Atari, has not been able to come up with a worthy likeness.

Finally Eclipse, writing for the Spectrum, have finally managed to translate the game to the home micro. The format is very easy to grasp: your little pistol is at screen bottom, and moves from left to right, firing at the various objects that move to and fro above. Each time one of these objects is hit, it disappears to the sound of a metallic clang. After clearing the screen of the ducks, rabbits and so on, a dancing Bear makes a foray across the screen, and you can shoot him for extra points — he won't disappear, but instead turn right around and give you another chance to zap him.

Here you will find all the same features as in the arcade version — the daffy ducks that, if you ignore them for too long, will eventually swoop down and gobble up your precious bullets, and the revolving clay pipes. Also present is the bonus box, and the extra bullets, assured as extra points for knocking out the word B-O-N-U-S.

And, amazingly for the Spectrum, there is even the same awful music which twiddles away while you play — absolutely essential to the full enjoyment of this program. Just try and tear yourself away from *Carnival!*

Tony Bridge

Program *Carnival* **Price** £5.95 **Micro** Spectrum **Supplier** Eclipse Software, EMS (Holdings) 10 Marshalsea Road, London SE1 1HL.

Magic mushroom

Kermits of the world unite! The intrepid survivors of *Frogger* are subjected to even more lethal attention in *Mad Monty* from Screenplay, a variation on the 'caterpillar' arcade games.

The object is to steer a snake within a walled garden to gobble up frogs. The snake grows longer with each successful conquest but is fatally wounded either by hitting a garden wall or by crossing its own tail. To make things worse, each digested frog spawns a poisonous toadstool. A succulent mouse appears from time to time, as does the odd magic mushroom which counteracts toadstool poison.

The game has five speeds and is controlled by the use of the four arrow keys. In action, I found Level 2 to be easier to start on than Level 1 and that Level 5 really requires a joystick. All the frogs have to be eaten from the garden before progressing to another screen and this is exceedingly difficult.

The graphics and sound are crisp and the score panel is clearly displayed above the field of play. Unfortunately, the game is let down by minor irritations. The original program has apparently been 'topped and tailed' using some extremely crude Basic. A "hall of fame" facility has been added which is displayed after each 3-try set for a tedious ten seconds or so and then two blocks of colour are laboriously built up in which to display the "continue" option. It doesn't affect the game itself, but I found that it spoilt the feel of pace and speed that an arcade game needs.

MAD MONTY
AUTHOR — SOFT-WARE BY JOYTEK

D Trueman

Program *Mad Monty* **Price** £5.95 **Micro** Dragon 32 **Supplier** Screenplay, 134 St Vincent Street, Glasgow G2 5JU.

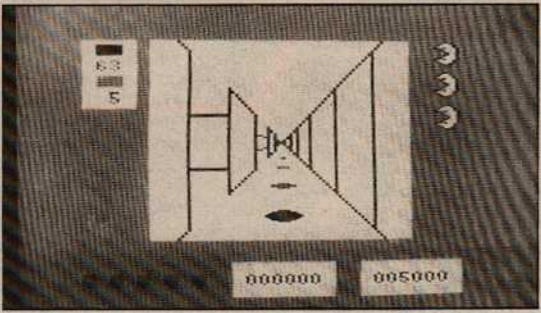
Blue loonies

In Salamander's *Red Meanie* game the player is an "intergalactic Cheese-snuffler" trapped in a maze of corridors. The object is to eat up as many cheeses as possible, which are found in the corridors, and avoid being eater by Red Meanies who are also in the maze.

Some of the cheeses when eaten turn Red Meanies into harmless Blue Loonies which are edible, but each of these, when eaten, is replaced in the maze by a Red Meanie. The Blue Loonies are suicidal, and seek to jump down the player's throat if not avoided in time.

The display is of a corridor maze and the forward movement can be made continuous by keeping the 'F' key depressed. This looks very effective, particularly with the perspective along a main corridor.

The Meanies are large and loom in a suitably menacing way particularly as they trundle towards you down the corridor. There is a warning sound when creatures are near and the maze retains its logical content (four right turns brings you back to where you started). Occasionally, a creature will flit across the corridor apparently oblivious of Cheese-snufflers which adds to the fun.



Red Meanie
Salamander
SOFTWARE
FOR THE DRAGON 32/64

The instruction leaflet is witty and the whole game is great fun — for a while.

D Trueman

Program *Red Meanie* **Price** *£7.95* **Micro** Dragon 32 **Supplier** Salamander, 17 Norfolk Road, Brighton, Sussex.

User unfriendly

It sounds harsh to say that these two cassettes represent a wasted effort on behalf of their author, but after struggling to find some good points to them that's the inevitable conclusion to which I've been forced.

The programs are designed to help you create database programs of your own in Basic. This they indeed do — the problem is that the "creation" programs are very user unfriendly, even to the point of putting the first program you need on cassette 2 and not telling you! The 20 page manual is not helpful, and the final product, ie, your customised database program, is not very flexible or useful.

Specific grouses include the lack of a *Verify* facility, essential to any serious use of a database, the slow response to key presses after some prompts leaving you stabbing at the keys and likely to miss the next prompt altogether, and the primitive *Break* protection: press *Break* and the program hangs up.

Program generator 1 and *Report Program Generator* do work, but are outclassed by the established database programs already available.

Simon Springett

Program *Program Generator* and *Report Program Generator.* **Price** £9.95 **Supplier** Spectrum Visions, 1 Felgate Mews, Studland Street, London W6.

Budding astronomers

The solar system presents you with a wide-ranging menu offering the opportunity to learn about the sun, planets and the other assorted objects that make up and surround our Solar System.

Written with the novice astronomer in mind the program seems fairly comprehensive at a beginner's level), although I would have liked more than a passing reference to Halley's Comet, and some guidance about where to find it! After seeing the relative sizes of the planets, a very passable demonstration of a meteorite flashing across the sky and maps of the more important constellations, you can try some tests which enable you to find out how much you have learned.

The author is by no means an advanced programmer, but he gets the Spectrum to do all that is required using Sinclair Basic. The original cassette of the program was a little hard to load, but there is a Save to Microdrive option which allows the recording of a working copy for day to day use.

I'd definitely recommend this program as a useful present to help get a budding astronomer off the ground (if you see what I mean).

Simon Springett

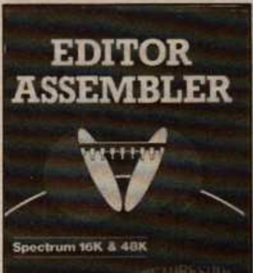
Program *The Solar System* **Price** £3.50 **Micro** 48k Spectrum **Supplier** Eaglesoft, 66 james Street, Scarborough, North Yorks.

Serious utility

Here is a serious utility program that is a joy to use and represents one of the (regrettably) all too few jewels of Spectrum programming.

An assembler is a program that will allow you to enter machine code mnemonics (the abbreviated instuctions to the processor at the heart of the computer), and will then automatically convert them into the correct numerical form. If, like me, you entered the world of machine code computing by hand assembling your programs you will find the *Editor Assembler* takes a lot of the sweat out of machine code.

Version 2.1 of this program has been made possible and necessary by the availability of interface 1, the Microdrive and an increasing number of parallel interfaces for the Spectrum. One especially useful feature is that you can now save up to 95K of assembly language onto tape or Microdrive (saved in up to 10 sections), and then assemble these sections together at one time. This enables you to create long machine code programs (at least 15K), despite the limited free memory in the Spectrum when the Assembler and (if you have it) the companion Monitor are loaded.



This program loaded easily, seems bug free and did all it claimed. What's more, purchasers of the earlier version can upgrade simply by sending a mere £1.50 to Picturesque.

I don't have room to extoll all its virtues — I suggest you buy it and find out for youself. This is a good program, and deserves a place in every serious programmer's library.

Simon Springett

Program *Editor/Assembler - Version 2.1* **Price** £7.50 **Micro** Spectrum 48k **Supplier** Picturesque, 6 Corkscrew Hill, West Wickham, Kent.

Bone search

Computer games generally call on the player to take the part of the central character in the game, and these make up a pretty varied assortment. However, *Where's My Bones* from Interceptor Micros is certainly the first I have seen where you have to play the role of the ghost of a monk.

The monk, called Brother Jeffrey (or BJ for short), has been murdered by a Green Demon, who has scattered BJ's bones around in the Underworld. You have to guide BJ though an underground maze in search of his bones. Not surprisingly, the subterranean caverns are full of hazards like giant spiders, serpents, moving blocks and electrical discharges. On reaching each set of bones, you gain points and also you replenish your shields, which are depleted each time you hit one of the underground creatures.

Although maze games are quite common, this one is challenging enough and different enough to make it interesting. The maze is not complicated, but it does require fine judgement and good timing to navigate through it successfully. Technically, the program is well up to the high standard now expected of games for the 64 with good, smooth graphics, and effective, if undramatic use of sound.

Richard Corfield

Program *Where's my Bones* **Price** £7 **Micro** Commodore 64 **Supplier** Interceptor Micros, Lindon House, The Green, Tadley, Hants.

Work out the rules

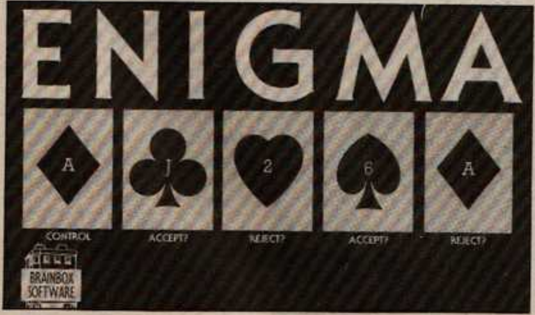
Most games tell you the rules and then you play. In *Enigma* from Brainbox you play in order to work out the rules! It's a bit like playing *Mastermind* against a micro.

The game's name isn't a tribute to Elgar but to the war-time machine which produced almost unbreakable codes.

The idea is to choose cards displayed on the screen using (fair graphics) either a standard pack or an 'infinite pack'. There are various options where either you or the computer choose cards and each time the micro tells you whether the choice is accepted or rejected. As the decisions mount up you have to try to guess the possible rule being applied. The test is to see if you can predict the result every time. If you can, then try the next rule. There are five different rules to solve and once you've worked them all out return your cassette with £4 and Brainbox will send you a cassette with five more.

The snag is that you have to keep a tally of cards accepted and rejected on paper — an anathema to dedicated hackers. It ought to be possible for a running list of moves to be displayed — some chess programs manage it.

Enigma is different enoguh to intrigue. The first rule was easy, the second harder and...well I haven't twigged the third one yet, but I will in a moment...



Dave and Jan Watterson

Program *Engima* **Price** £5.95 **Micro** BBC B **Supplier** Brainbox Software Ltd., 20 Orange Street, London WC2H 7ED.

Spritely characters

This program offers the chance to fill a gap in the Spectrum's screen display facilities lamented especially by games writers, namely the absence of Sprites. Sprites are characters that can be easily moved around the screen, passing through other objects — and indeed one another.

Spectrum Sprites gives you the opportunity to set up eight sprites, each of which is contained in a 16*16 pixel square, ie four times the area of a standard character. With the program cassette you get a tiny booklet with simple instructions for setting up and using the sprites. These are straightforward, and it proved easy to design a few shapes to use in a simple test routine.

Actually using the sprites is not so easy: to display or erase each sprite requires four pokes, together with a call to a short machine code routine (saved automatically from the program tape when you save your shapes).

Dedicated games writers will find this program a useful help to have around, but I felt the program could have given much more very easily. More than eight characters, for example, or a collision detection system that would indicate which two sprites had collided rather than just that a collision had occurred. Perhaps a little overpriced at £7.95, but worth having nevertheless if you are writing your own arcade type games and finding the going difficult.

SPECTRUM SPRITES
Design Generate and handle your own Sprite Routines
ISP
48K SPECTRUM

Simon Springett

Program *Spectrum Sprites* **Price** £7.95 **Micro** Spectrum **Supplier** ISP Marketing, Crown House, 386 High Street, Godalming, Surrey.

Mission impossible

The impression I have always had of Interceptor is one of a company which sells copies of best-selling games, notably *Manic Miner* (with their *China Miner*). This game for the Spectrum from them has yet to convince me of their originality. That said, though, this adventure looks set to take me some time to solve — and I think I'll be kept fairly busy, and happy, most of the way.

You start off by being in a spaceship when you hear a distress call — your mission being to investigate, you head for the planet. Descriptions are short, almost to the point of being boring (the yellow room is just one example). But there are a few graphic locations to brighten things up a bit. This brings out one good feature — after you have seen a graphic once, you are not shown it again when you return to the same place unless you ask for it; this saves a lot of time and frustration.

As in the best adventures, what you are supposed to do is very unclear, so I just wander around trying to work out some sort of map, and collecting objects. Apart from the prose, or lack thereof, the game reminds me somewhat of the universally acclaimed adventures from Level 9.

Like many adventures there are some irritating anomalies. For example, on entering the Armoury, you cannot then *Examine* the armoury — the computer tells you it does not understand *Armoury*, this obvious nonsense should be tweaked out of adventures by now.

David Lester

Program *Message from Andromeda* **Price** £5.50 **Micro** Spectrum **Suppliers** Interceptor Micros, Lindon House, The Green, Tadley, Hants.

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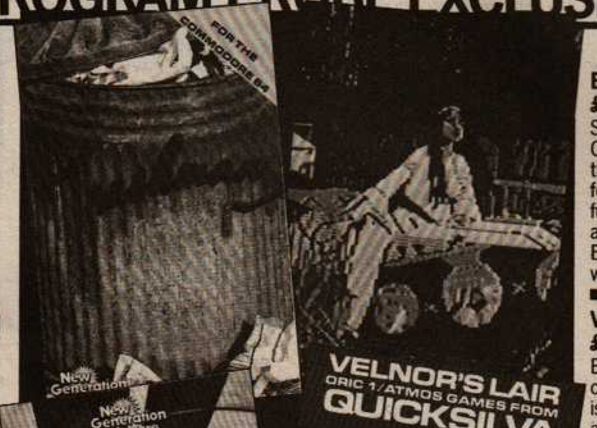

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Art for art's sake

***E A Jackson,** produces graphics using P mode 3 on the Dragon 32*

When using *Pmode* 3, the Dragon 32 has a 4-colour graphic capability which is probably superior to most of the current range of 8-bit micros. Yet, we seldom see programs which exploit this capability. *Draw* and *Paint* are powerful commands, but the effect is rather like *painting with a broad brush. Often, what we* require is a way of bringing out the fine detail.

Fortunately, the graphic pages are memory mapped and to obtain fine detail we *can Poke* graphic characters, direct to the appropriate area of screen *Ram*. We know that in the low resolution mode, each character produces a shape 8 pixels wide and 12 pixels deep and that 512 characters would fill the screen. In *Pmode* 3, resolution is 12 times greater and to fill the screen we would need to poke a massive 6144 separate characters. However, we are not looking to fill the whole screen. For our purpose it is sufficient to create small areas of fine detail.

In the high resolution mode, the first page of screen *Ram* normally starts at memory location 1536. However, if you have Disk Drives fitted, you will find that this location has been moved to accomodate the Disk Operating System and the beginning of screen *Ram* is now at location 3072.

It takes 32 bytes of memory to store the information necessary to control one line of the screen display. In *Pmode* 3, each byte controls an area 8 pixels wide and 1 pixel deep (8 × 32 = 256). The single byte at location 1536, therefore, controls the screen display at positions (0,0) — (7,0). If we consider this to be four separate areas, each 2 pixels wide and 1 pixel deep, we can build up a character shape, using any of four colours in each position.

Each memory location holds a value between 0 and 255 and this value determines which colour appears in each position. Values between 0 and 255 are expressed in binary as a combination of eight zeros or ones and if again, we consider this combination of digits to represent 4 separate groups of two, we can see how the colours are controlled. For each group of two binary digits, there are four possible combinations to match the four possible screen colours.

In *Pmode* 3, the most useful colour combinations are green, yellow, blue and red and for our purposes, we can translate the colours to the following binary equivalents:-

Green = 00, yellow = 01, blue = 10, red = 11

If you are alarmed at the thought of having to handle a multitude of binary conversions, the following table will reduce the task to the simple addition of four figures.

Position 1		Position 2		Position 3		Position 4	
Green	0	Green	0	Green	0	Green	0
Yellow	64	Yellow	16	Yellow	4	Yellow	1
Blue	128	Blue	32	Blue	8	Blue	2
Red	192	Red	48	Red	12	Red	3

If we *Poke* location 1536 with 255, (equivalent to 192+48+12+3), the high resolution screen will display a red line, 8 pixels long and 1 pixel deep, at position (0,0) — (7,0). If we were to *Poke* location 1537, with the same value, the line would be displayed at position (8,0) — (15,0). To produce a line immediately below the first position, we would need to *Poke* a character to location 1568 (1536+32).

Working with a piece of squared paper and a set of four coloured pencils, we can create very detailed graphic characters and if required, use *Get* and *Put* to move them around the screen. The point to bear in mind is that each block of colour must be 2 pixels wide and 1 pixel deep.

Before you start to design your graphic character, you have first to decide on the background colour. Normally, green provides the best contrast for the remaining colours. If you change your mind later, you will have to re-calculate the values to be *Poke d.*

Once the values have been calculated, it is a simple matter to set up a series of *Data* statements to *Poke* the values direct to the appropriate area of screen *Ram*. If you are not convinced of the value of this method of creating User-Defined Graphics, enter the example program to see what can be achieved with just a little planning.

Program notes

To increase the word list change variable J2 in line 110 and add extra words in *Data* statements from line 1030.

80- 160	Initialisation sequence
170- 390	Main loop.
400- 420	Display wrong guesses.
430- 440	Display correct answer.
450- 470	Display CORRECT message.
480- 510	Update scoreboard.
520- 540	Display fresh screen.
550- 650	Set-up initial display.
660- 690	Routine to draw text.
700- 780	Data for text.
790- 940	Set-up screen graphics.
950- 980	Routine to control hanging.
990-1060	Display hanging sequence.
1070-1100	Data for User-defined graphics.
1120-1130	Data for word list.

```
10 REM ************************
20 REM HIGH RESOLUTION GRAPHICS
30 REM   FOR THE DRAGON 32
40 REM
50 REM    BY E.A.JACKSON
60 REM ************************
70 DIM A(153),Z(32)
80 FOR B=1TO153:READ A(B):NEXT B
90 PMODE 3,1:PCLS1:SCREEN1,0
96 READ A
100 FOR B=1TO51:C=1536+(B*32):POKE C,A(B):POKEC+
1,A(B+51):POKE C+2,A(B+102):NEXT B
110 GET(0,0)-(23,51),Z,G
120 PCLS1:PUT (110,70)-(133,121),Z,PSET
130 GOTO 130
140 DATA 0,0,3,15,13,13,13,5,5.1,0,0,2,10,41,170
,169,170,165,170,165,170,165,170,165,170,165,170
,90,95,31,15,15,15,15,15,15,15,15,15,15,15,15,15
,15,15,15,1,15,63,60
150 DATA 48,252,255,255,221,85.17,85,85,85,116,8
4,154,170,85,170.85,170,85,170,85,170,85,170,85,
170,85,170,170,255,255,255,255,255,255,207,207,2
07,207,207,207,207,207,207,207,207,69,207,20
7,204
160 DATA 0,0,0,192,192,192,192,64,64,0,0,0,0,128
,160,168,168,168,104,168,104,168,104,168,104,168
,104,168,148,212,208,192,192,192,192,192,192,192
,192,192,192,192,192,192,192,192,0,192,240,2
40
CHECKSUM=18828
```

An element of truth

***Guy Fullalove** presents a chemistry program to identify elements and their symbols*

This program has been written for a 16K or 48K ZX Spectrum with a microdrive. It can be used either as a database for reference or as a test for revision purposes.

To enter the program first enter listing one, which is the source file. This will create a file on microdrive one called "data". As it starts with a *CHR$ O*, it will be invisible to a *Cat* command (chapter 6, page 27).

Now type *New* and enter listing two; this is the main program. When you have entered it type *Run 9000*. This will *Save* and *Verify* the program.

Finally, type *New* followed by *LOAD *"m";1;"Elements"* and the program will *Load* and *Run*.

Program Notes

Lines 5 – 120 Print up the menu and take your choice
1000 – 1090 Work out the name of the element from the symbol
1100 – 1160 Print up the information from the cartridge
2000 – 2080 Work out the symbol of the element from the name
3000 – 3130 Create the test
3135 – 3210 Asks questions on symbols
4040 – 4120 Asks questions on names
9000 – 9020 Saves and Verifies the program on microdrive one

Variables

a$	General response variable
n$	Element name
s$	Element symbol
ram	Relative Atomic Mass
l	Level of difficulty
n	FOR – NEXT variable

```
   5>REM         Elements
  10 REM © 1984 Guy Fullalove
  20 CLS : PRINT TAB 7;"The Peri
odic Table"
  30 PRINT TAB 6;"==============
======"
  40 PRINT ''TAB 5;"Options";TAB
 4;"========="
  50 PRINT 'TAB 7;"1) Symbols"
  60 PRINT 'TAB 7;"2) Names"
  70 PRINT 'TAB 7;"3) Test"
  80 PRINT ''TAB 9;"Choose optio
n"
  90 LET a$=INKEY$
 100 IF a$<"1" OR a$>"3" THEN GO
 TO 90
 110 GO SUB VAL a$*1000
 120 RUN 20
1000 CLS : PRINT TAB 9;"Symbols"
1010 INPUT "Input the symbol ";
LINE a$
1015 PRINT AT 10,1;"Loading in d
ata - Please wait"
1020 OPEN #4;"m";1;CHR$ 0+"data"
1030 FOR n=1 TO 104
1040 INPUT #4;n$;s$;ram
1050 IF a$=s$ THEN CLOSE #4: GO
TO 1100
1060 NEXT n: CLOSE #4
1070 PRINT ''"There is no such s
ymbol as"'a$
1080 GO TO 1140
1090 RETURN
1100 CLS : PRINT ''"Atomic Numbe
r   :";n
1110 PRINT '"Name of element:";n
$
1120 PRINT '"Symbol          :";s
$
1130 PRINT '"R.A.M.          :";r
am
1140 PRINT '''TAB 5;"Press any k
ey to continue"
1150 IF INKEY$<>"" THEN RETURN
1160 GO TO 1150
2000 CLS : PRINT TAB 9;"Elements
"
2010 INPUT "Input the name "; LI
NE a$
2015 PRINT AT 10,1;"Loading in d
ata - Please wait"
2020 OPEN #4;"m";1;CHR$ 0+"data"
2030 FOR n=1 TO 104
2040 INPUT #4;n$;s$;ram
2050 IF a$=n$ THEN CLOSE #4: GO
TO 1100
2060 NEXT n: CLOSE #4
2070 PRINT ''"There is no such e
lement as"'a$
2080 GO TO 1140
3000 CLS : PRINT TAB 14;"TEST";T
AB 13;"======"
3010 DIM b$(1)
3020 INPUT "A test on elements o
r symbols ? "; LINE b$
3030 IF b$<>"E" AND b$<>"e" AND
b$<>"S" AND b$<>"s" THEN GO TO 3
020
3040 INPUT "Level of difficulty
(1 TO 8) ";l
3050 IF l<>INT l OR l<1 OR l>8 T
HEN GO TO 3040
3060 LET z=l*13
3070 LET score=0
3075 DIM n$(10,15): DIM s$(10,2)
3077 PRINT AT 10,1;"Loading in d
ata - Please wait"
3090 FOR n=1 TO 10
3095 OPEN #4;"m";1;CHR$ 0+"data"
3100 LET s=INT (RND*z)+1
3110 FOR m=1 TO s
3120 INPUT #4;n$(n);s$(n);ram
3130 NEXT m: CLOSE #4: NEXT n: C
LS
3133 IF b$="E" OR b$="e" THEN GO
 TO 4000
3135 FOR n=1 TO 10
3140 INPUT "Which element has th
e symbol ";(s$(n));" ?"; LINE e$
3150 IF (e$+"               ")( TO 15)
=n$(n) THEN LET score=score+10:
PRINT AT 10,5;"That was correct"
;AT 11,3;s$(n);" = ";n$(n);AT 14
,5;"Press any key to continue":
PAUSE 0: GO TO 3170
3160 PRINT AT 10,5;"That was wro
ng";AT 11,3;s$(n);" = ";n$(n);AT
 14,5;"Press any key to continue
": PAUSE 0
3170 CLS : NEXT n
3190 PRINT "You got ";score;"%"
3200 PRINT '("Well done" AND sco
re>80)
3210 PRINT ''TAB 5;"Press any ke
y to continue": PAUSE 0: RETURN
4040 FOR n=1 TO 10
4050 INPUT "What is the symbol f
or "'(n$(n));" ? "; LINE a$
4060 IF (a$+"  ")( TO 2)=s$(n) T
HEN LET score=score+10: PRINT AT
 10,5;"That was correct";AT 11,3
;s$(n);" = ";n$(n);AT 14,5;"Pres
s any key to continue": PAUSE 0:
 GO TO 4080
4070 PRINT AT 10,5;"That was wro
ng";AT 11,3;s$(n);" = ";n$(n);AT
 14,5;"Press any key to continue
": PAUSE 0
4080 CLS : NEXT n
4090 PRINT "You got ";score;"%"
4100 PRINT '("Well done" AND sco
re>60)
4110 PRINT ''TAB 5;"Press any ke
y to continue": PAUSE 0
4120 RETURN
9000 CLEAR
9010 SAVE *"m";1;"Elements" LINE
 10
9020 VERIFY *"m";1;"Elements"
```

```
10 REM Elements data
20 OPEN #4;"m";1;CHR$ 0+"data"
30 FOR n=1 TO 104
40 READ a$,b$,ram
50 PRINT #4;a$'b$'ram
60 NEXT n
70 CLOSE #4
80 STOP
90 DATA "Hydrogen","H",1
100 DATA "Helium","He",4
110 DATA "Lithium","Li",6.9
120 DATA "Beryllium","Be",9
130 DATA "Boron","B",10.8
140 DATA "Carbon","C",12
150 DATA "Nitrogen","N",14
160 DATA "Oxygen","O",16
170 DATA "Fluorine","F",19
180 DATA "Neon","Ne",20.2
190 DATA "Sodium","Na",23
200 DATA "Magnesium","Mg",24.3
210 DATA "Aluminium","Al",27
220 DATA "Silicon","Si",28.1
```

```
230 DATA "Phospherus","P",31
240 DATA "Sulphur","S",32.1
250 DATA "Chlorine","Cl",35.5
260 DATA "Argon","Ar",29.9
270 DATA "Potassium","K",39.1
280 DATA "Calcium","Ca",40.1
290 DATA "Scandium","Sc",45
300 DATA "Titanium","Ti",47.9
310 DATA "Vanadium","V",50.9
320 DATA "Chromium","Cr",52
330 DATA "Manganese","Mn",54.9
340 DATA "Iron","Fe",55.9
350 DATA "Cobalt","Co",58.9
360 DATA "Nickel","Ni",58.7
370 DATA "Copper","Cu",63.5
380 DATA "Zinc","Zn",65.4
390 DATA "Gallium","Ga",69.7
400 DATA "Germanium","Ge",72.6
410 DATA "Arsenic","As",74.9
420 DATA "Selenium","Se",79
430 DATA "Bromine","Br",79.9
440 DATA "Krypton","Kr",83.8
450 DATA "Rubidium","Rb",85.5
460 DATA "Strontium","Sr",87.6
470 DATA "Yttrium","Y",88.9
480 DATA "Zirconium","Zr",91.2
490 DATA "Niobium","Nb",92.9
500 DATA "Molybdenum","Mo",95.9
510 DATA "Technetium","Tc",99
520 DATA "Ruthenium","Ru",101.1
530 DATA "Rhodium","Rh",102.9
540 DATA "Palladium","Pd",106.4
550 DATA "Silver","Ag",107.9
560 DATA "Cadmium","Cd",112.4
570 DATA "Indium","In",114.8
580 DATA "Tin","Sn",118.7

590 DATA "Antimony","Sb",121.8
600 DATA "Tellurium","Te",127.6
610 DATA "Iodine","I",126.9
620 DATA "Xenon","Xe",131.3
630 DATA "Caesium","Cs",132.9
640 DATA "Barium","Ba",137.3
650 DATA "Lanthanum","La",138.9
660 DATA "Cerium","Ce",140.1
670 DATA "Praseodymium","Pr",140
.9
```

```
680 DATA "Neodymium","Nd",144.2
690 DATA "Promethium","Pm",147
700 DATA "Samarium","Sm",150.4
710 DATA "Europium","Eu",152
720 DATA "Gadolinium","Gd",157.3
730 DATA "Terbium","Tb",158.9
740 DATA "Dyprosium","Dy",162.5
750 DATA "Holmium","Ho",164.9
760 DATA "Erbium","Er",167.3
770 DATA "Thulium","Tm",168.9
780 DATA "Ytterbium","Yb",173
790 DATA "Lutetium","Lu",175
800 DATA "Hafnium","Hf",178.5
810 DATA "Tantalium","Ta",181
820 DATA "Tungsten","W",183.9
830 DATA "Rhenium","Re",186.2
840 DATA "Osmium","Os",190.2
850 DATA "Iridium","Ir",192.2
860 DATA "Platinum","Pt",195.1
870 DATA "Gold","Au",197
880 DATA "Mercury","Hg",200.6
890 DATA "Thallium","Tl",204.4
900 DATA "Lead","Pb",207.2
910 DATA "Bismuth","Bi",209

920 DATA "Polonium","Po",210
930 DATA "Astatine","At",210
940 DATA "Radon","Rn",222
950 DATA "Francium","Fr",223
960 DATA "Radium","Ra",226
970 DATA "Actinium","Ac",227
980 DATA "Thorium","Th",232
990 DATA "Protactinium","Pa",231
1000 DATA "Uranium","U",238.1
1010 DATA "Neptunium","Np",237
1020 DATA "Plutonium","Pu",242
1030 DATA "Americium","Am",243
1040 DATA "Curium","Cm",247
1050 DATA "Berkelium","BK",245
1060 DATA "Californium","Cf",251
1070 DATA "Einsteinium","Es",254
1080 DATA "Fermium","Fm",253
1090 DATA "Mendelevium","Md",256
1100 DATA "Nobelium","No",254
1110 DATA "Lawrencium","Lr",257
1120 DATA "Kurchatovium","Ku",25
3
```

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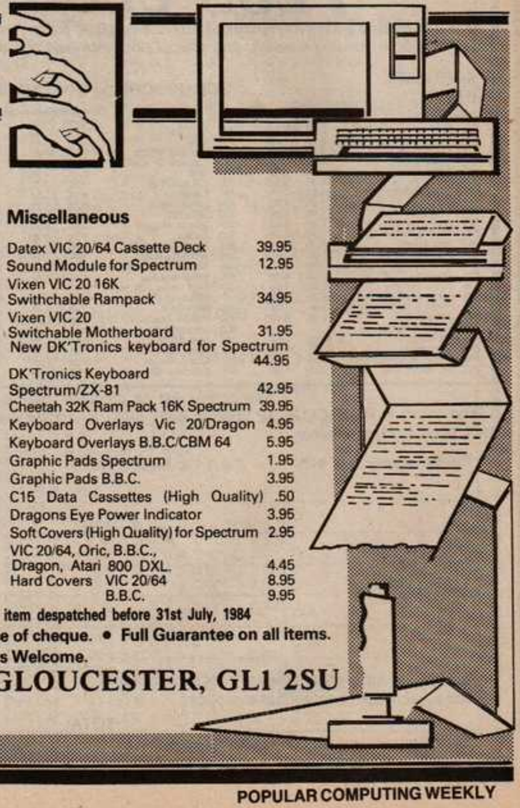

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Graphically filed

***Neil Barnes** presents a multi-purpose facility program for BBC with 1.2 operating system*

This is a sophisticated File program designed to make use of Mode 7 BBC graphics. It has many of the features found in commercial business filing systems.

The main intention was to make the program as user friendly and error trapped as possible. For example, if you try to print a file that does not exist you will be returned to the main menu. Files can be sorted into alphabetical order and printed out on any parallel printer. Printer dumps can be alphabetical or numerical.

The program will keep you informed of the amount of space left for new files and verify your entries if required.

The search routine will discover any sequence of letters you choose even if it is embedded in a longer string, eg, Fred will be found from John Fred Smith and so on. There are *View* options which enable you to see part or all of the completed file. The program is well illustrated by Rem statements so the general structure of the program should be fairly clear.

The main sections of the program are achieved by use of Procedures – a complete list of these and their functions will follow in part two next week.

```
   10 REM ***************************
   20 REM **      FILEKEEPER       **
   30 REM **      NEIL BARNES      **
   40 REM **      FOR PCW MAY 84   **
   50 REM **  THANKS GO TO MISS    **
   60 REM **  FOULKES FOR GIVING   **
   70 REM **  ME AN EXTRA DAY      **
   80 REM ***************************
   90 REM Initialise array
  100 ON ERROR RUN
  110 DIM C$(7)
  120 REM Set display mode
  130 MODE7
  140 REM Turn cursor off
  150 VDU23;8202;0;0;0;
  160 N=1
  170 PROCmenu
  180 DEFPROCmenu
  190 PROCtitle("MENU",13)
  200 FOR L=1 TO 7
  210 PRINTTAB(3,L+5);L;"..."
  220 NEXT
  230 REM Read data into array
  240 FOR M=1 TO 7
  250 READ C$(M)
  260 NEXT
  270 REM Reset data pointer
  280 RESTORE
  290 FOR Y=1 TO 7
  300 PRINTTAB(6,Y+5);C$(Y)
  310 NEXT
  320 VDU31,2,16,131:PRINT"E...End program"
  330 DATA Create a new file,Add items to file,Verify file,Dump file to printer
Sort file,Search for item in file,List file
  340 VDU31,5,20,130:PRINT"Please input your choice"
  350 A$=GET$
  360 IF A$="E" PROCend
  370 IF LEN(A$)>=2 THEN SOUND1,-15,100,2:GOTO340
  380 VDU31,30,20,130:PRINT A$
  390 V=VAL(A$)
  400 IF V<1 OR V>7 THEN PRINTTAB(0,15)STRING$(25," "):GOTO340
  410 PROCdecide
  420 DEFPROCtitle(T$,H)
  430 CLS
  440 FOR Z=1 TO 2:PRINTTAB(H,1+Z)CHR$141CHR$129(T$);NEXT
  450 ENDPROC
  460 DEFPROCdecide
  470 REM Decide which option
  480 IF V=1 PROCnewfile
  490 IF V=2 PROCadd
  500 IF V=3 PROCverify
  510 IF V=4 PROCdump
  520 IF V=5 PROCsort
  530 IF V=6 PROCsearch
  540 IF V=7 PROClist
  550 DEFPROCnewfile
  560 PROCtitle("NEW FILE",11)
  570 VDU31,0,5,131:PRINT"If there is already a file in memory"
  580 VDU131:PRINT"then creating a new one will erase"
  590 VDU131:PRINT"the existing file."
  600 PRINT''
  610 VDU133:PRINT"Do you still wish to create a new file?"
  620 A$=GET$
  630 IF A$="Y" OR A$="y" THEN PROCgetdata
  640 IF A$="N" OR A$="n" THEN PROCmenu
  650 ENDPROC
  660 DEFPROCgetdata
  670 PROCtitle("INPUTTING THE DATA",7)
  680 REPEAT
  690 PRINT''
  700 VDU31,0,5,131:PRINT"Please give the new file a title."
  710 PRINT
  720 VDU129:PRINT"Maximum 9 characters."
  730 PRINT
  740 VDU31,0,9,134:PRINT"TITLE OF NEW FILE:"
  750 REPEAT
  760 INPUTTAB(20,9)NF$
  770 IF LEN(NF$)>=10 THEN SOUND1,-15,200,1:PRINTTAB(20,9)STRING$(20," ")
  780 UNTIL LEN(NF$)<=9
```

continued over the page

```
 790 PRINT''
 800 VDU133:PRINT"Please input the approximate number of"
 810 VDU133:PRINT"items you wish to store in the file."
 820 PRINT
 830 VDU31,1,17,130:INPUT"APPROXIMATE NUMBER OF ITEMS:"AI:PRINTTAB(30,17)STRING
$(10," ")
 840 IF AI<2 OR AI>100 THEN SOUND1,-15,200,1:GOTO830
 850 PRINT
 860 VDU131:PRINT" 10% will be added as a safety measure."
 870 AI=AI+INT((AI/10))
 880 REM Initialise file array
 890 DIM file$(AI)
 900 VDU31,6,24,134:PRINT"Press SPACE BAR to continue"
 910 REPEAT UNTIL GET=32
 920 CLS
 930 PROCtitle("INPUTTING THE DATA",7)
 940 VDU31,0,5,130:PRINT"Please input the data."
 950 PRINT:VDU131:PRINT"Maximum of 15 characters."
 960 PRINT:VDU133:PRINT"Type *** to stop inputting data."
 970 REM Input data into file
 980 FOR loop=1 TO AI
 990 VDU31,0,13,134:PRINT"Item number";" ";N;":"
 1000 INPUTTAB(16,13)IT$
 1010 PRINTTAB(15,13)STRING$(25," ")
 1020 IF LEN(IT$)>15 THEN SOUND1,-15,100,1:PRINTTAB(15,13)STRING$(25," "):GOTO10
00
 1030 IF IT$<>"***" file$(loop)=IT$:N=N+1:SOUND1,-15,180,1
 1040 IF IT$="***" THEN 1070
 1050 IF AI=N THEN 1060
 1060 NEXT
 1070 SOUND1,-15,50,1
 1080 PRINT''
 1090 VDU131:PRINT"End of input:Do you wish to verify the"
 1100 VDU131:PRINT"file ?"
 1110 A$=GET$
 1120 IF A$="Y" OR A$="y" THEN PROCverify
 1130 IF A$="N" OR A$="N" THEN PROCmenu
 1140 PROCmenu
 1150 ENDPROC
 1160 DEFPROCadd
 1170 PROCtitle("ADDING ITEMS TO FILE",7)
 1180 IF AI>N THEN VDU31,0,5:PRINT" There is room for another";" ";AI-N;" ";"ite
ms.":GOTO1200
 1190 IF AI=N VDU31,0,5,134:PRINT"You have used all the room that you":VDU134:PR
INT"allocated.":PRINTTAB(5,22)"Press SPACE BAR for menu":REPEAT UNTIL GET=32:PRO
Cmenu
 1200 VDU31,0,9,131:PRINT"Enter the data as you did in OPTION 1"
 1210 PRINT
```

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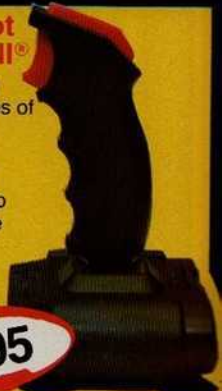

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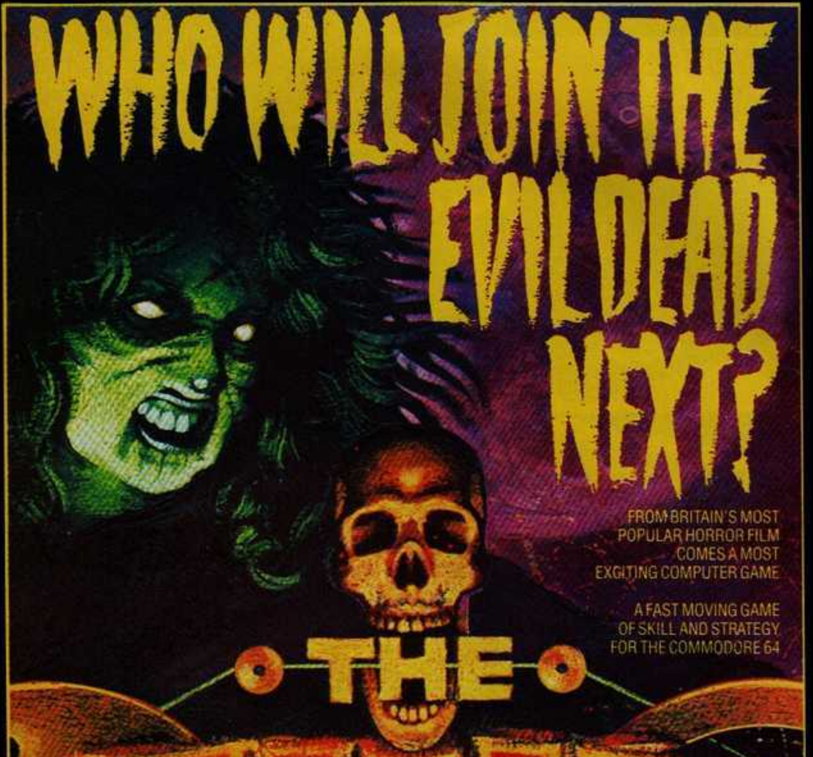
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The QL philosophy

***Andy Pennell** takes a look at the QL Parallel Printer Interface from Miracle Systems*

As the QL regrettably only has a serial interface for printers, the release of a parallel interface from Miracle Systems would seem to be very useful. It consists of a small white box with a cable that plugs into Serial Port 1 on the QL, and a Centronics type plug for the printer. As it is a hardware-only device, it requires no software and should, in theory, be 100% compatible with any Centronics printer.

The supplied instructions are brief, not even mentioning the device name that should be used. To use from BASIC, a stream must first be opened, with something like open#3, ser 1. For printout or listings the normal commands are used, but with #3 inserted; eg, *Print # 3.* The first interface supplied for review, a production device, didn't work at all well. When producing listings, characters were missed out, and screen dumps were hopeless. After contacting Miracle Systems, a 'design change' was made, and a revised interface supplied.

This was a great improvement, and worked very successfully. It handled *Print, List,* print outs from *Quill,* and even the high-res screen dumps from *Easel.* Even at 9600 baud printouts from the serial connection to the printer interface makes things slow, but that is not Miracle's fault. A generous three metres of cable is included with the device.

This interface seems to follow the QL philosophy, by being first advertised, then manufactured, released in a non-working version, then revised due to customer response.

Now it is working, though, it is very neat, requires no power supply, is easy to use, and is reasonably priced. Anyone else who first received a faulty interface can apparently now get a rapid replacement.

Device: QSP Parallel Printer Interface
Micro: QL
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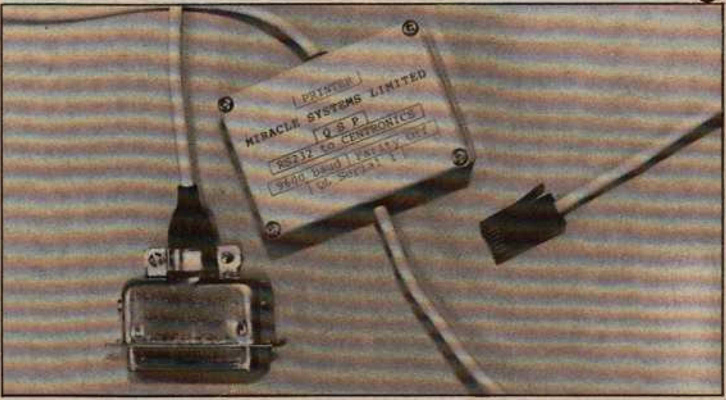

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An edited version

Simon Wallace demonstrates a cassette-based word processor

Anyone who has a Commodore 64 and a Printer can use this cassette-tape based word processor. The system is no toy — it has all the basic facilities required for word processing. It was designed to work efficiently, but to be comparatively easy to use and to understand. The following paragaphs examine the requirements of a word processing system, the design criteria employed, the implementation of the system and how to use the *PCW-C64-WP*.

Word Processing

Any word processor is in reality a microcomputer, often with less technical capability than your Commodore 64. It runs a single program to store data typed on the keyboard and print it out on request. The program will be enormously complex to deal with the dozens of specialised requirements of word processing. The microcomputer will often have special hardware features such as a high-quality printer, specially-labelled keys and a TV screen the same 'A4' shape as a normal business letter.

The most important function of a word processor is text editing. The user must be able to juggle the words in any manner desired. The method employed is known as a screen editor. With this any item shown on the screen can be changed. Extra text can be inserted or unwanted text deleted. This is in contrast to the line editor such as the Basic program editor of the Commodore 64. In a line editor, text is added, deleted or changed a line at a time.

The standard paper is about 80 characters wide, but there is often a need to produce wider documents. Some editors can scroll sideways so that a longer line can be accessed. The same idea can be used to scroll up and down on the screen, giving more than a single screen to edit. In fact, the screen editor has then become an entire text editor where the operator can manipulate the whole file at one time.

However, it would be tiresome if the operator had to adjust all the following text if only part of a line is added. All word processors have features to reformat the text to any given width and margin. Format routines may include columns and other special layouts. Usually special symbols are used on the screen to indicate the layout. Some word processors have the ability to mark and then manipulate blocks of data.

Other features of the editor will relate to printing. Special symbols are used to select functions of the printer. These control characters will affect line spacing, starting a new page and any character-set options. A very common use is to select bold characters for headings. Character set features may include special symbols such as mathematical notation or common graphic characters.

This is all very well, but it is important to bear in mind the abilities of the hardware. Some machines connect to an enormous variety of printers such as laser printers, microfiche and typesetters. Often a word processor is connected to a communications network which offers many difficult forms of output including output to another machine's screen (electronic mail). However, the typical machine has only its own printer attached. Usually this will be a high-quality printer of the daisy-wheel type, which is limited to standard character sets.

There are other aspects of a word processing system than editing and printing. Facilities are provided to store and retrieve data. File maintenance software will take security copies and keep indices. Some manufacturers also offer spelling checkers to highlight words not in the vocabulary. Another common feature is to produce standard letters given a list of the variable data; for example, a list of names and addresses. Finally, the most complex refinement offered by some systems is to do all the above for several screens sharing the same printers and other hardware

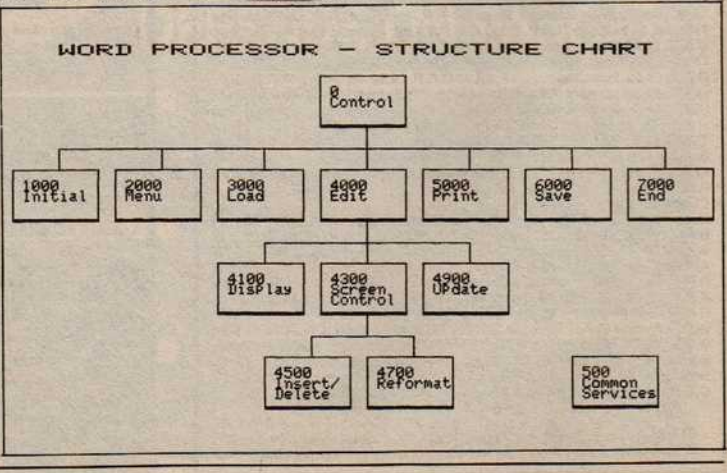
Design of the PCW-C64-WP

This word processor was designed to be entirely coded in Basic. By doing so, the program is quick to implement, easy to understand and simple to extend. However, there are two major drawbacks. Firstly, Basic is relatively slow, so it is necessary to use whole line input and output to the screen. This means that lines must be marked by inverted commas if leading spaces or punctuation are present. This is done automatically by the program. Secondly, Commodore 64 Basic can not be made infallible or break-proof. The system can be broken by the *Run Stop* key, or by typing invalid characters on the screen. (Never use double inverted commas in your text!) There is a way to restart the program without losing your data, but it is unsatisfactory that Basic does not permit the program to trap its own errors and recover.

It is designed with sufficient structure for its level of complexity, with a control module which first calls the initialise routine and then offers the menu, followed by whichever option is selected. This sequence of menu then option is repeated until the *Finish* option is selected. The program loads and saves data files on cassette tape. (You may wish to make your first change to the system so that it will also handle disc files.) These routines can handle all or part of the data. The save routine can also read back the file to verify the tape.

The print routine prints to a printer on channel 4 or 5, or to the TV screen. The TV option permits the user to view the finished layout without printing. All or part of the data may be printed, and several layout options are available. A standard margin can be added to each line, and each line can be numbered. This latter feature is useful in selecting which line numbers are required for editing, part printing or part saving. A page length can be given which dictates how many lines to print continuously. A page gap is then specified to control how many blank lines to print between pages. Alternatively, the program will pause while the paper is lined up manually. Special print control characters are available to start a new page (↑) and to indicate a blank line (←).

The major part of the program is the screen editor. The design is similar to most screen editors on mainframe computers. The user specifies where to start in the file



and how much data to show on the screen. This data is changed using the keyboard, including the *Insert* and *Delete* keys. Logical lines can be up to 80 characters which is two lines on the screen. As with the Basic line editor, the computer remembers which lines are linked in this way. When the text is as required, the *F1* key is used to finish the edit. If the edit is not aborted, whatever is now on the screen replaces the lines originally displayed.

Special functions are available to assist in the addition or deletion of text. The *F3* function will reformat the text to a given width, allowing for any additional margin required. (Note that new page and blank line characters are not affected.) *F5* causes an additional blank line to be available at the current position of the cursor. *F6* deletes a line from the screen at the current cursor position. *F7* moves the cursor to the start of the next logical line without ending the current line. The *Return* key is used at the end of a line. It will terminate the line at that point, disregarding any subsequent text.

Next week, we will take a more detailed look at how to use the *PCW-C64-WP*.

Operator's Notes

F1 End *Edit*
F3 Reformat text
F6 Delete line
(F6 = shift+5)
F7 Go to next logical line

Use Return key at end of line
← Visible blank line
↑ Start new page

Defaults:
Edit starts at end of file
displays 0 lines
Print, Load and *Save*
start at record 1
end at end of file
Print page gap–pause option
device–TV screen
margin = 0
no line numbering

Reformat to width 70 & margin 0 if you break Basic enter *GOTO999*

```
WORD PROCESSOR BY SIMON WALLACE
0 REM
2 rem       "VERSION 20"
5 rem
8 rem....."CONTROL MODULE"
10 9osub 1000
20 9osub 2000
30 on a 9osub 3000,4000,5000,6000,7000
40 9oto 20
500 rem..."COMMON SERVICE ROUTINES"
510 Print"██ Press any key to continue█"
520 9et x$ : if x$="" then 520
530 return
550 rem 9aP between Pa9es
560 if P9>0 then:for k=1 to P9 : Print#2 : next k
570 if P9<0 then 9osub 510
580 lc=0 : return
600 rem read screen
605 oPen 1,3 : ln=0
610 Print chr$(19);
620 for j=1 to 25
630 sys 49152 : x=Peek(253)
635 if x<rl then ln=j
640 inPut#1,sc$(j) : next j
660 for lr=25 to 1 steP-1 : if sc$(lr)<>"" then 680
670 next lr
680 close 1 : Poke 53280,11 : return
700 rem start new line
710 sys 49152 : Print" "; : Poke Peek(253)*40+1024,34 :
return
800 rem set uP edit screen
810 Print "█"; : rem clear screen
820 for j=1024 to 1984 steP 40 : Poke j,34 : Poke j+1,34
: next j
830 return
999 close 1 : close 2 : close 3 : 9oto 20
1000 rem.."INITIALISE"
1010 eof=0
1020 Print chr$(14)chr$(8)chr$(147)
1030 dim sc$(25),tx$(2000)
1035 bl$=" : rem 40 sPaces
1040 cd$="█████████████████████████" : rem 25 cursor downs
1045 qu$=chr$(34) : q2$=qu$+chr$(44)
1049 x=0
1050 read i : x=x+i+1 : if i<0 then 1100
1060 if i>255 then j=i : 9oto 1050
1070 Poke j,i : j=j+1 : 9oto 1050
1100 if x<>52466 then Print"error - check tyPin9 - checksum
=";x : stoP
1110 return
1500 rem..m/c code to Plot cursor Position
1501 rem..also - turn border red if on bottom line or
if >= column 70
1504 data 49152,56,32,240,255,134,253,132,254
1505 rem "SEC : JSR PLOT : STX 253 : STY 254"
1510 data 138,162,11,233,24,48,2,162,2
1515 rem "TXA : LDX #11 : SBC #24 : BMI 2 : LDX #2 "
1520 data 152,233,70,48,2,162,2,142,32,208,96,-1
1525 rem "TYA : SBC #70 : BMI 2 : LDX #2 : STX 53280 : RTS"
Position to turn red
1530 rem..the third number in line 1520 isthe cursor
2000 rem.."MENU"
2020 Poke 53280,2 : Poke 53281,5
2030 Print"███    Word Processor by Simon Wallace"
                                                ██"
2040 Print"♦
2100 Print sPc(12) "█ L   Load"
2110 Print sPc(12) "█ E   Edit"
2120 Print sPc(12) "█ P   Print"
2130 Print sPc(12) "█ S   Save"
2140 Print sPc(12) "█ F   Finish"
2200 9et x$ : a=0
2210 if x$="l" then a=1
2220 if x$="e" then a=2
2230 if x$="P" then a=3
2240 if x$="s" then a=4
2250 if x$="f" then a=5
2260 if a<1 then 2200
2270 return
3000 rem.."LOAD ROUTINE"
3010 Poke 53280,4 : Poke 53281,6
3020 Print "███         LOAD DATA FILE FROM TAPE█"
3024 rem.. the followin9 lines are also 9osubbed from 6030
3025 fi$=""
3027 Print"  Enter Filename"
3028 Print"    (1-15 characters in lower case)█"
3030 inPut"  Filename = ";fi$
3040 if fi$ = "" then return
3050 Print "█ Enter start and end line numbers"
3060 Print "    (or Press <RETURN> for whole file)█"
3070 j=0 : k=31999 : inPut "  Start line no ";j : if j<1
then j=1 : 9oto 3095
3080 inPut "  End line no ";k:if k<j then return
3095 if a=4 then return : rem if 9osubbed from line 6030
3100 oPen 3,1,0,fi$ : Poke 53280,5
3105 i=0 : eof=0 : l=k-j+1 : if j<2 then 3140
3110 inPut#3,out$ : if st<>0 then 3180
3120 j=j-1 : if j>1 then 3110
3140 i=i+1 : inPut#3,tx$(i)
3150 if i>=l then 3200
3160 if st=0 then 3140
3170 if st=64 or st=-128 then 3200
3180 Print "ERROR READING FILE!"
3190 Print "█Error status rePly = ",st
3200 close 3
3210 eof=i : Print "End of file at line ";eof
3980 9osub 510
3999 return
4000 rem.."EDIT"
4010 Poke 53280,11 : Poke 53281,13
4020 Print "██"sPc(12)"█Screen Editor"
4025 Print "█ Line no or End (E)";
4030 l$=str$(eof+1) : inPut l$
4035 if l$="e" or l$="E" then return
4037 el=val(l$):if el>eof+1 then Print"█ ERROR - End of
file at";eof: 9oto 4025
4039 if el<1 then Print "█ ERROR" : 9oto 4025
4040 en=0 : inPut" No lines to disPlay";en
4045 if en<0 or en>24 then Print "█ ERROR" : 9oto 4025
4050 9osub 4100
4060 9osub 4300
4070 9osub 4900
4080 9oto 4010
4100 rem.."DISPLAY"
4109 9osub 800 : if en<1 then 4130
4110 for j=el to el+en-1
4115 if j>eof then next j : en=eof-el+1 : 9oto 4130
4120 Print qu$;tx$(j);q2$ : next j
4130 Print "██";
4199 return
```

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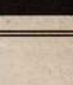

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Spectra

on BBC

Welcome to Spectra. This program draws a planet and then with animated graphics rotates it about its axis. The program makes use of BBC colour/sound and hi-res graphic routines.

Program Notes

10 — 50	Rem statements (can be left out)
60 —	Computer goes into Graphic Mode 2
70 — 130	Sets up arrays to store Sine & Cosine routines
180 — 240	Assigns Proc statements
260 — 310	Procedure for plotting stars
330 — 410	Procedure for drawing the Planet
430 — 560	Draws the lines of Longitude (North South)
580 — 690	Procedure for drawing the ring round the planet
710 — 780	Special procedure for the animated rotation
800 — 810	Two lines to aid the rotation progress

```
10 REM  ************************
20 REM  ***      SPECTRA     ***
30 REM  ***    N.Etheridge   ***
40 REN  ***     (c) 1984     ***
50 REM  ************************
60 MODE2
70 DIM S(90),C(90)
80 SC%=-1
90 R%=400
100 FOR A=0 TO RAD 360 STEP RAD 4
110 SC%=SC%+1
120 S(SC%)=SIN(A):C(SC%)=COS(A)
130 NEXT
140 VDU23;8202;0;0;0;
150 VDU19,0,4;0;
160 VDU19,4,7;0;
170 VDU19,7,0;0;
180 PROCSTARS
190 PROCPLANET
200 PROCLONGITUDE
210 PROCSATURN
220 REPEAT
230 PROCSPECTRA
240 UNTIL FALSE
250
260 DEF PROCSTARS
270 FOR ST%=0 TO 700
280 GCOL0,RND(16)
290 PLOT69,RND(1280),RND(1023)
300 NEXT
310 ENDPROC
320
330 DEF PROCPLANET
340 VDU29,640;512;
350 GCOL0,2
360 MOVE0,0
370 FOR SC%=0 TO 90 STEP 2
380 MOVE0,0
390 PLOT85,S(SC%)*R%,C(SC%)*R%
400 NEXT
410 ENDPROC
420
430 DEF PROCLONGITUDE
440 C%=6
450 FOR L%=0 TO 45
460 C%=C%+1
470 IF C%=16 THEN C%=7
480 GCOL0,C%
490 FOR SC%=0 TO 45 STEP 3
500 X=S(SC%)*C(L%)*R%
510 Y=C(SC%)*R%
520 IF SC% THEN K%=5 ELSE K%=4
530 PLOT K%,FNX,FNY
540 NEXT
550 NEXT
560 ENDPROC
570
580 DEF PROCSATURN
590 GCOL0,4
600 FOR W%=500 TO 572 STEP 9
610 FOR R%=36 TO 99 STEP 3
620 SC%=R% MOD 90
630 IF R%=36 THEN K%=4 ELSE K%=5
640 X=C(SC%)*W%
650 Y=S(SC%)*100
660 PLOTK%,FNX,FNY
670 NEXT
680 NEXT
690 ENDPROC
700
710 DEF PROCSPECTRA
720 FOR C%=7 TO 15
730 SOUND1,-15,5,.1:SOUND1,-15,10,.1
740 VDU19,C%,7;0;
750 WAIT=INKEY(10)
760 VDU19,C%,2;0;
770 NEXT
780 ENDPROC
790
800 DEFFNX=(0.9*X)+(-0.4*Y)
810 DEFFNY=(0.4*X)+(0.9*Y)
```

Spectra
by N Etheridge

Psychiatrist

on Spectrum

This program simulates human intelligence by giving reasonable replies to questions and phrases the user types in. Shorter inputs generally get more rewarding responses and will be analysed more quickly. Before running the program ensure *Caps Lock* is on as the program ignores lower case entries.

This program uses Currah Micro Speech and will give a crude spoken answer if you have it attached. If you don't have one lines 1000 onwards can be omitted and line 167 should be removed. Change 175 *Goto* 10. The program works by slicing the inputted question into single words then comparing these words with set ones held in data statements.

```
   1 BORDER 0: PAPER 0: INK 7: C
LS
   2 INPUT "SPEECH =1 , TEXT =0
";T$
   3 LET SPE=0: IF T$="1" THEN L
ET SPE=1
  10 INPUT A$: LET A$=A$+" "
  11 LET S=1
  12 IF A$=" " THEN GO TO 10
  13 IF A$(LEN A$-1)="?" THEN LE
T A$=A$( TO LEN A$-1)+" "
  14 IF LEN A$<4 THEN LET A$=A$+
"   "
  15 LET R$="": LET D$="": LET Q
$="": LET R$="": LET S1=1: LET D
=0: LET NEG=0: LET N$=""
  20 FOR A=1 TO LEN A$: IF A$(A)
<>" " THEN NEXT A: GO TO 75
  25 LET W$=A$(S1 TO A-1): LET S
1=A+(1 AND A<>LEN A$)
  30 RESTORE 35: FOR B=1 TO 5: R
EAD B$,C$
  35 DATA "*YOU","ME","+ME","YOU
","+I","YOU","+MY","YOUR","*YOUR
","MY"
  40 LET DD=(1 AND B$(1)="*")+0:
 LET B$=B$(2 TO )
  45 IF W$<>B$ THEN NEXT B: GO T
O 55
  46 IF W$="YOU" AND D=0 THEN LE
T C$="I"
  50 LET R$=R$+C$+" ": LET D=D+D
D: NEXT A: GO TO 75
  55 RESTORE 60: FOR B=1 TO 5: R
EAD B$
  60 DATA "NO","NOT","NEVER","DO
NT","CANT"
  65 IF W$<>B$ THEN NEXT B: LET
R$=R$+W$+" ": NEXT A: GO TO 75
  70 LET NEG=1: LET N$=B$+" ": N
EXT A
  75 RESTORE 80: FOR B=1 TO 9: R
EAD B$
  80 DATA "DOES","DO","WHY","WHA
T","WHEN","WILL","CAN","COULD","
SHOULD"
  85 IF R$( TO (LEN B$ AND LEN B
$<LEN R$))=B$ THEN LET R$=R$(LEN
 B$+2 TO ): LET Q=1: LET Q$=B$:
GO TO 100
  90 NEXT B
  95 DATA "WHY DO YOU WANT TO KN
OW"+R$,"IM NOT TELLING YOU","IM
ASKING THE QUESTIONS","CHANGE TH
E SUBJECT"
  96 DATA "CARRY ON","OH I SEE",
"WHY DONT YOU "+R$,"I SEE"
 100 IF N$="NEVER " THEN LET N$=
"DONT "
 110 IF NEG=1 THEN GO TO 130
 120 RESTORE 35: FOR B=1 TO 5: R
EAD B$,C$: LET B$=B$(2 TO ): IF
R$( TO (LEN B$ AND LEN B$<LEN R$
))=B$ THEN LET D$=B$: LET R$=R$(
LEN B$+2 TO ): GO TO 130
 125 NEXT B
 130 IF N$="" THEN LET N$="DO YO
U WANT TO "
 131 LET WW=0
 135 IF D$<>"" AND Q$="" OR D$<>
"" AND NEG=1 THEN LET N$="DO YOU
 SAY␣"+D$+"␣"
 136 RESTORE 35: FOR B=1 TO 5: R
EAD B$,C$: LET B$=B$(2 TO )
 137 IF R$(S TO (S+LEN B$-1 AND
S+LEN B$-1<LEN R$))=B$ THEN LET
WW=WW+1: IF WW>2 THEN LET R$=R$(
 TO S-1+LEN B$): GO TO 150
 138 NEXT B: LET S=S+1: IF S<LEN
 R$ THEN GO TO 136
 150 LET X$="WHY "+N$+R$+" "+(W$
 AND R$(LEN R$-LEN W$ TO LEN R$-
1)<>W$)
 155 IF Q$="WHAT" OR Q$="WHEN" T
HEN RESTORE 95: FOR B=1 TO INT (
RND*4)+1: READ X$: NEXT B
 160 IF A$=R$ THEN RESTORE 96: F
OR B=1 TO INT (RND*4)+1: READ X$
: NEXT B
 164 IF LEN X$<32 THEN LET X$=X$
+"
 "( TO 32-LEN X$)
 165 IF R$="" THEN LET X$="WHAT
ABOUT ME
                        "
 166 IF X$(32)<>" " THEN LET X$=
X$( TO 31)+"  "+X$(32 TO )
 167 IF spe=1 THEN GO TO 1000
 170 LET SC=USR 3582: PRINT AT 2
1,0;X$( TO 32)
 171 IF LEN X$>32 THEN LET SC=US
R 3582: PRINT AT 21,0;X$(33 TO )
 175 IF spe=0 THEN GO TO 10
1000 DATA "SAY","S(aa)","A","(aa
)","WANT","(wh)ont","TO","(TT)(o
uu)","HAVE","hav","WHY","(wh)(ii
)","WHO","(wh)(ouu)","ME","m(ee)
","I","(ii)","YOU","y(ouu)","MY"
,"m(ii)","YOUR","y(or)","THAT","
(th)a(tt)","SEE","s(ee)","WHEN",
"(wh)een","WILL","(wh)i(ll)","DO
NT","d(oo)n(tt)","DO","d(ouu)","
CAN","kan"
1001 LET ss=1: LET z$="": FOR t=
1 TO LEN x$-1
1002 IF x$(t)<>"␣" THEN NEXT t:
GO TO 1100
1003 LET w$=x$(ss TO (t-1 AND t-
1<LEN x$)): LET ss=(t+1 AND t+1<
LEN x$)
1004 IF LEN w$=0 THEN GO TO 1040
1005 RESTORE 1000: FOR f=1 TO 19
: READ a$,b$
1010 IF w$<>a$ THEN NEXT f: LET
Z$=Z$+" "+W$: GO TO 1040
1015 LET z$=z$+" "+b$
1040 NEXT t
1045 IF spe=1 THEN LET s$=z$: FO
R y=0 TO 200: NEXT y: GO TO 10
```

Psychiatrist
by Mark Andrews

The Box

on BBC

This program is for any BBC computer in Mode 7.

This program produces a double lined border around any number of characters. Both the character's colour and the border colour can be set up. The demonstration shows the boxes overlapping and separate.

```
 10 REM MODE7 BOX PROGRAM
 20MODE7:VDU23;11,0;0;0;0
 30 PROCbox(0,2,149,131,"A")
 40 PROCbox(5,9,145,134,"Box")
 50 PROCbox(13,16,148,133,"DEMONSTRATION")
 60 PROCbox(18,2,151,130,"By G.PARRIS")
 70 GOTO70:END
 80
 90 DEFPROCbox(X%,Y%,C,C2,A$)
100 n=LEN(A$)+2:RESTORE 170
110 FORR%=0TO7
120 READ a,b,c,d,e,f,g
130 IF R%=3 OR R%=4 THEN VDU31,X%,Y%+R%,C,a,b,c,C2,32:PRINTA$;:VDUd,
e,f,g:NEXT140 VDU31,X%+1,Y%+R%,C,a,b,c:PRINTSTRING$(n,CHR$d);:VDUe,f,g
150 NEXT:ENDPROC
160
170 DATA 95,112,112,112,112,112,48
180 DATA 106,95,112,112,112,48,53
190 DATA 106,106,32,32,32,53,53
200 DATA 141,106,106,C,32,53,53
210 DATA 141,106,106,C,32,53,53
220 DATA 106,106,32,32,32,53,53
230 DATA 106,162,163,96,96,33,53
240 DATA 162,163,163,96,96,96,33
```

The Box
by G Parris

Microradio

GW6JJN

Summon the Space cavalry

This week I will continue the review of the Tandy TRS 80 Model 100 and its applications in radio.

I have mentioned before the AMT-1 communications interface from ICS Electronics in reference to the Commodore series of computers. The AMT-1 can, however, also be used with RS232C interfaces, one such being on the Model 100. It is a simple enough job to connect the Tandy to the AMT-1. It offers, apart from the usual Radio Teletype, the Amtor system which is a form of extremely accurate radio teletype with error checking facilities.

Amtor is a British system first invented by J. P. Martinez G3PLX. Once two stations using the system are locked together synchronously, then the contact will remain almost completely 100 per cent even through difficult interference conditions. This is faster and more accurate than morse code as well as being a lot more efficient. Of course you could still use Morse Code on this system, but that would be akin to using a hammer to crack a nut.

The other mode available with the unit is direct ASCII. Several baud rates are available set by another program resident in the incredible Model 100. Called *Telecom*, this program is designed to send data and files, etc, over the phone, but of course it can be used just as well to send data over the air. Just think for a minute about what your computer can display on the screen using the in-built ASCII codes that contain all the characters available on your keyboard. Whatever you type, or have contained in memory files, can be transmitted. This column could be transmitted in a matter of seconds. Using the Model 100 and the AMT-1, very sophisticated and error free communication is possible.

The radio applications of the Model 100 are in themselves justification for getting the machine. Added to that are the facilities and in-built programs that make life so easy with the machine as well as the RS232c interface and parallel printer port.

In fact, the combined cost of the Model 100 and the AMT-1 is well below that of most shortwave radio transceivers. During the review period, I found the machine a great asset in my radio shack and, since it is made by a company whose name is Radio Shack in the United States, it somehow seemed fitting.

With the Model 100, which is no bigger than the size of this magazine, one can communicate worldwide and have the facilities of computers that only a few years ago filled whole rooms. I can remember seeing films when I was about ten years old where the hero merely spoke into his wristwatch in order to summon the space cavalry. Now we are almost at the point where we can take such things for granted. More on wristwatch radios next week.

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share, or topics that you would like to see covered, write to: Ray Berry, Microradio, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Open Forum

Starburst

on Dragon

This produces a starburst effect in a series of colours and backgrounds chosen on a random basis.

Program notes

10-20 Prepares screen
30-40 Sets Variables
50 Draws lines

```
 1 REM STAR BURST
 5 REM M. TRUELOVE 1984
10 N=RND(4)
20 PMODE N: SCREEN N,N:PCLS N
30 FOR A=1 TO 255 STEP 10
40 FOR B=1 TO 255 STEP 10
50 LINE(127,90)-(A,B),PSET
60 NEXT B
70 NEXT A
80 GOTO 10
```

Starburst
by Mark Truelove

Arcade Avenue

Tip of the iceberg

This week I continue my look at Ocean Software by looking at some of their latest releases.

Eskimo Eddie is another in the line of well produced arcade copies that made Ocean its name. In case you can't guess from the title this is a version of *Pengo* that reinforces the reputation for graphics that the company has. Of all the myriad versions of *Pengo* that have been released for the Spectrum, this one looks most like the original penguin character.

The game also plays better than the majority of the releases by other houses, although that doesn't mean it plays well. *Pengo* is one of my favourite arcade games and *Eskimo Eddie* made me painfully aware of the slowness of the Spectrum compared to dedicated machines. The penguin is slow to respond compared to the speed of the snow bees and, since there are fewer places to run on the limited screen size of the machine, it proves incredibly hard to survive.

Like *Mr Wimpy* this game opens with a bonus screen unrelated to the original arcade format — in this case a sort of arctic frogger which involves dodging polar bears and icebergs. Unfortunately, this proves ridiculously easy if you wait at one side of the screen and time your dash carefully, and it soon becomes a merely irritating impediment to getting on with the *Pengo* game.

However, if you are looking for a pretty good version than do consider this one, especially if you have one of the many joystick options because this will make all the difference to the playability.

Pogo is Ocean's latest charting release and deservedly so. It is without doubt the best *Q-Bert* I have seen for the Spectrum (although Automata's *Pi-Balled* comes close). There is no point in explaining what it's about since I'm sure you all know, but take my word that the graphics are excellent, the sound is good and the level of difficulty seems just right. The big departure for Ocean was that this game is in fact licensed from R&R Software. This obviously gives the advantage of Ocean's reputation and marketing clout to the smaller company and a similar deal seems to have been reached by Vortex for the CBM 64 version of the excellent *Android 2.*

The Hungarian company Andromeda have written *Chinese Juggler* for Ocean, a game that deservedly has received many kudos for its originality. Based on the old magic act where a demented refugee from Pyrex spins dozens of plates on long wobbly sticks, the quality of this game is beyond question. Graphics and music are superb and if, like me, you found the original stage act mind numbingly dull to watch don't worry. Playing *Juggler* is almost like being there yourself with all the frustration and addiction. My only regret is that the plates do not smash everywhere adding to the chaos.

Recently released for the Spectrum as well as the CBM 64, it will be interesting to see if the version for the Sinclair machine is as good. The wonderful soundtrack added so much to the Commodore game.

The final game I want to look at is *Transversion,* one of Ocean's lesser known program. This release is worthy of note for several reasons. It is a shoot-em-up space game (rare for Ocean), it is a 16K game (very rare for Ocean) and it is an original game that is written by one of Ocean's own programmers (gasp . . . faint). So what's it like? Well, pretty average really. It is a graphically unambitious grid game rather reminiscent of Jeff Minter without the loud whams! and blams! It suffers from being 16K but Ultimate proved that that should not stop a great game being great. *Transversion* is reasonably addictive and worthy of several plays, but is really nothing special.

So there we are. I'm still waiting to get a glimpse of *Gilligans Gold* and *Cavelon,* the two latest releases. One day Ocean will come up with an original game, written by themselves, that is of the same quality as their arcade copies. It should be worth waiting for.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to: Tony Kendle, Arcade Avenue, *Popular Computing Weekly,* 12-13 Little Newport Street, London WC2R 3LD.

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Tony Bridge's Adventure Corner

Lost in the forest

Now to some of your letters: Christopher Rolland, from West Sussex, writes about *Inca Cure*, Adventure B from Artic. "Dear Tony, I cannot get past the latched door to the Temple, I have tried everything, but nothing will work. Please help!" When confronted by a locked door, one of the things that may work in an adventure, apart from unlocking it with a key, is to *Break* the door or lock in some way. In *Inca Curse*, you should have found something in the first location (the Clearing). To find this, and to use it, try (the Corner Code. Start at the second letter and read off every other letter. At the end, return to the first letter and repeat the process.

ESAT/KRLI/APTL/CEHA/(VHE/OSW★/?G)E/★TUS/STEEI/SCTK/I★CB/KR

"Tony Bridge — HELP!! I desperately need your advice on *Madness and Minotaur* for the Dragon 32, as I am stuck on the first floor looking for the elusive mushroom, which you need to get the first spell. Also, I can't get the lamp to light."

This is from Richard Iveson of East Yorks. Well, Richard, this is an Adventure that I haven't had the pleasure of playing myself, although some months ago there was a flurry of interest in it from readers of this column (see Vol 2 No 31, in which Brian Cadge reviewed it — he didn't like it). This might be a clue to the problem with the lamp:

IULR/FNOC/ROTN/HTEA/LIAN/MSPO

And as for the dreaded mushroom, which seems to have caused an awful lot of trouble:

RYAO/NUDN/TEHE/EDMF/UOSO/HDRF/OROO/MMFF/RIOR/MSTT/HFIL/RODO

Scott Adams is a name that surely needs no introduction to readers of the Corner. Several letters have reached The Grand Elf concerning the cartridge versions of the series for the Vic-20.

"Dear Tony, How do I enter the crack in *Voodoo Castle*? In *Adventureland*, I can't get past the throne room. Help, please! *Pirate Cove* has me stumped trying to get the second treasure.

"Here are my votes for these Adventures: *Voodoo Castle* 8/10: a very good Adventure, realy gets the brain and imagination working — very hard, superb Scott Adams! *Adventureland* 7/10: I think I'd enjoy it more if I could get further, but whenever I feel down, a witty comment! *Pirate Cove* 10/10: Brilliant! Debbie Dore (age 12) Greater Manchester.

I agree with your rating of *Pirate Cove*, Debbie, it is my favourite Scott Adams — at the moment! I have just started playing this one and can't help you much (maybe some kind person . . .), but as a nudge in the right direction, try reading the map! To get through the crack, you may find that the Medium will be able to help you. There is a mirror in the lava, but I don't have the faintest idea how you might get it. Help please!

David Poole from Crewe, is also having trouble with *Voodoo Castle*. He says that the lamp mentioned doesn't exist — but have you got the Idol, David? If you try cleaning it, you may find it has some wonderful properties that will help shed light on the darker corners of the Castle! And incidentally, yes, the Scott Adams book of Hints is available in the UK. It will cost you about a fiver, and your local Atari/Commodore stockist should have it. It's very useful in some cases, but will by no means give you the whole solution to any of the Adventures.

Mrs C White writes from Woking to beg for help in *The Count*. "This is our very first Adventure and quite honestly, we've got nowhere. Can you give us a few clues?"

Scott Adams Adventures are a good place to start, Mrs White, though they are not the easiest. In *The Count*, it would seem to be a good idea to go and find the Count before he comes to get you! Start by examining the Castle from the outside. If this doesn't help, you might find some objects near the bed — if you find the Crypt after all this, there'll be something there that will point you to the Count's resting place.

Turning from Scott Adams now, I received a letter from Brian Christie of Belfast some weeks ago. He runs an Adventure Club in the local youth club, which has solved a few games, but is having terrible trouble with *Knight's Quest*:

"We are stuck at the narrow cleft and have tried just about everything but nothing works. If I am to encourage greater participation in the club, it is essential that problems are solved within a reasonable time span."

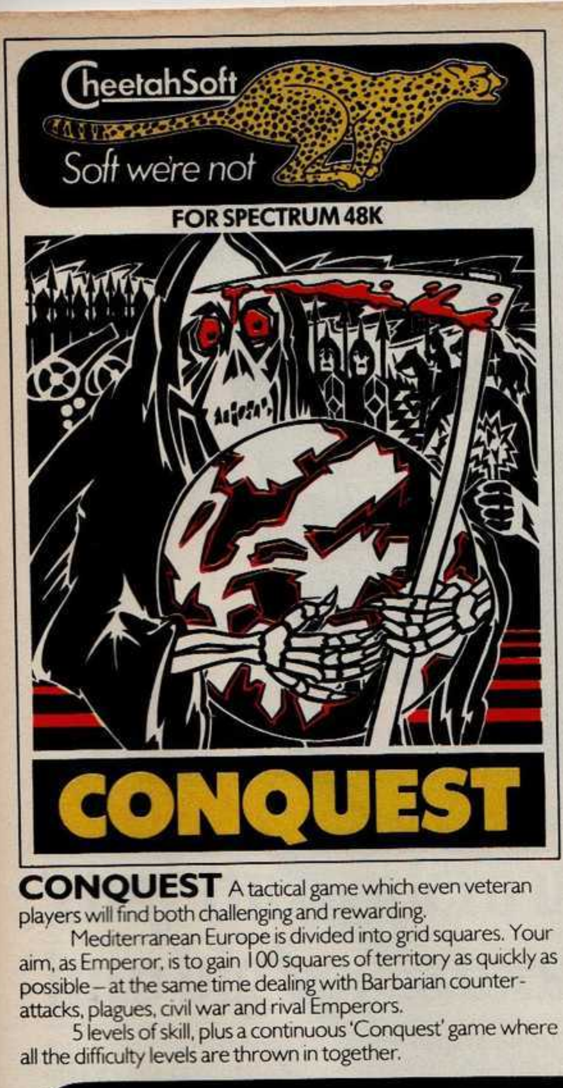
I have to sympathise, Mr Christie, adventures can often be very annoying. However, the environment you describe, with many people putting their heads together to wrestle with a problem, will eventually uncover the solution. — I always find that two heads are better than one in working through an Adventure.

By now, you will have probably found the solution to the Narrow Cleft, but for anyone else at the same place in this most intriguing program, all that needs to be done (as you will find that your character cannot go through the crack in person) is to send someone else. This is one of those solutions that is so stunningly obvious when pointed out to you that you wonder how you could have missed it! — an excellent example of the sort of problem to be found in *Knight's Quest*.

Finally, the first letter asking about an adventure for the Memotech MTX 512. It's from D R Brimmer of Chandler's Ford, near Southampton. He is stuck in *Alice in Wonderland*, and he cannot get the warrant without getting lost in the Forest. Can anyone help?

We've neglected *The Hobbit* Hall of Fame for a while, so next week I will update it with some of the many names of people who have completed the Adventure.

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further write to: Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.



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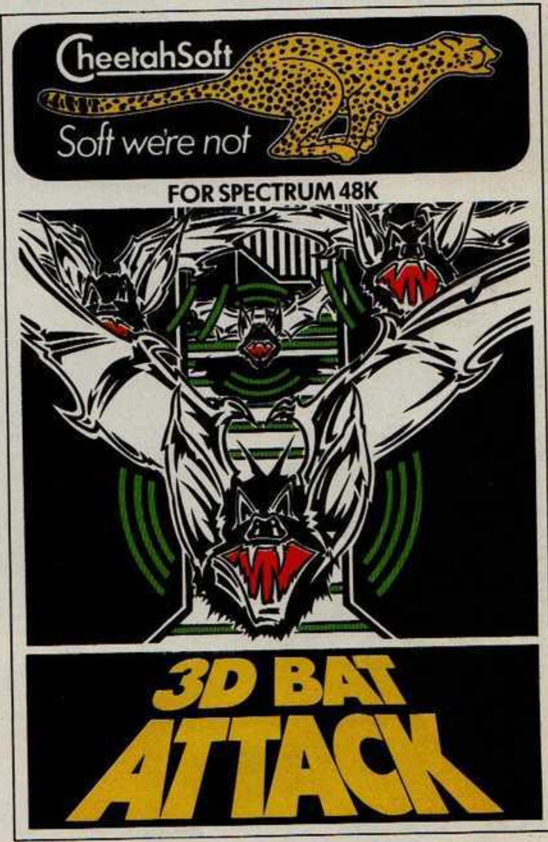

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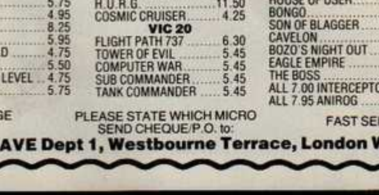

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A Simple Answer

Andrew Hollyhead of Tiffany Green, West Midlands writes:

Q **I have a ZX81 and 16k Rampack. For a while I have been contemplating buying a ZX printer. But, for my computer course at school I have an Acorn Electron to help me. Is there an interface that will let me run a ZX printer from an Electron?**

A The simple answer is no. Although a number of companies are working on RS-232 printer interfaces for the Electron, I have not been able to find anyone who is working on a ZX printer interface. Also, the fact that Sinclair are to stop production of the ZX printer makes it even more unlikely that one will ever appear.

Across The Pond

Marcel Basi, of Aberdeen writes:

Q **I will have to leave for the USA in a few months time. I have got a BBC model B and I would like to be able to use it over there. What exactly do I have to do to modify it so that it will work in the States without any problems?**

A I am indebted to Bill Murray of the RAF for the answer to this question. Bill has recently returned from the States and he wrote to me of his experiences, which were:

1) take a British tv with you
2) buy a 120-240 volt transformer before you go
3) you will need to replace all your plugs when you get there as US plugs are much smaller

Bill also suggests that, as computer prices are so much lower in the States than they are here, it might be cheaper and simpler for you to buy a new machine when you get out there.

Financial Times

D. P. Harrison of Fredrick Street, London writes:

Q **I have had a 48k Spectrum for some months now.**

I am at the moment writing a financial program which requires saving string and numeric variables at one point and then reloading them back into the program at a later stage for further calculations. I have b een having trouble reloading the data back in. I have seen similar programs where files are used for address book-type programs, but not for a mixture of string and numeric data.

Could you let me know the solution to this problem?

A I don't know whether I can solve your problem bu maybe an example would help.

```
10 DIM a$(20,12)
20 DIM v(20)
30 FOR i = 1 TO 20
40 INPUT "SALES STAFF" LINE A$(i)
50 INPUT "VALUE OF ORDER" LINE V(i)
60 NEXT i
70 SAVE "names" DATA a$()
80 SAVE "vals" DATA v()
```

The above program will accept details of 20 sales staff. The information entered is the sales person's name and the value of orders taken. Lines 70 and 80 save this data on cassette. To load the data back in to the program you need to use; Load " " Data v(). Ie, you need to reload your data into either the same or similar arrays (the *Dim* statements must be the same).

I hope this helps you on your way.

Locked-Up Games

R Barnes of Peterborough writes:

Q **Could you tell me why some machine-code games on my 1.2OS BBC Model B lock up as soon as they have loaded and are ready to be played. My computer is normally reliable, and the same games such as Acornsoft's *Snooker* work perfectly well on a friend's 1.2OS BBC.**

I hope that you'll be able to tell me the solution to this — knowing me it probably has a very simple explanation.

A Unfortunately not. I wonder if you have disc drives connected? Loading problems associated with discs on the BBC (some makes of drive) are quite common.

If you have a cassette-based system, have you tried your recorder with your friend's BBC? If it doesn't work you know you need a new recorder. If that isn't the fault I suggest that you take your computer to your friend's house and try and load using his set-up onto your machine. If it doesn't work then you would be well advised to have your computer tested by an Acorn dealer.

Control Characters

B. Coleman of North Hyeham, Lincoln writes:

Q **Basic programs published in magazines and books often use a command to position the cursor when row and column numbers have been included. For example, Print Tabl (*C, r*); "x", where *c* is the column, and *r* is the row.**

This does not work with the Aquarius. Can you please tell me the correct formula?

A No facility exists in standard Basic to do this on the Aquarius. This same problem has been faced by Vic20 owners for some time.

The only way round it in Basic is by including the correct number of Newline and Cursor Right control characters in each string to be printed — which is pretty tedious.

The lack of a *Tab* facility on the Aquarius means that getting good screen displays is a very laborious process, I'm afraid.

Full-Size Copies

R D Appleby of Cwmbran Gwent writes:

Q **Do you know of a program that will screen dump on a Seikosha GP-250X printer at a 64-character width? I have a 48K Spectrum and need to do full-size hard copies.**

I tried to write my own routine using the printer codes in the Seikosha manual, but was unsuccessful.

A One program that would serve your purpose is *Taswide* produced by Tasman Software. When used in conjunction with Tasword 2, this will allow screen dumps such as you require to be produced. *Taswide* itself allows up to 64 characters per line (on the screen).

For more information on the range of facilities available I suggest you contact Tasman yourself. The address is Tasman Software, 17 Hartley Cresent, Leeds LS6 2LL.

Alarm System

Kevin Stone, of Basildon, Essex writes:

Q **I would be interested to know whether a ZX81 or Spectrum can be used to control a burglar alarm system on a house, and also whether there are any books on the subject.**

A It is indeed possible for either of these machines to be used to control an alarm system. A useful introduction to the subject would be *The Spectrum Hardware Manual* by Dickens published by Melbourne House, and available from most computer retailers.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW*, 12-13 Little Newport Street, London WC2R 3LD.

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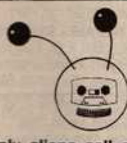

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MAGAZINES

DRAGON USER

To make the most of your Dragon you need **Dragon User** — the independent magazine for Dragon owners. To make sure that you receive a copy of Dragon User regularly subscribe direct to us. A year's subscription costs £10 for 12 issues (overseas rates available on application). Send a cheque or postal order made payable to Dragon user, and accompanied by your name and address, to Dragon User, Subscription Department, Oakfield House, Perrymount Road, Haywards Heath, Sussex RH16 3DH.

Computer Swap 01-437 4343

Free readers entries to buy or sell a computer.
Ring 01-437 4343 and give us the details.

For sale

ZX PRINTER and paper £30. Spectrum Scrabble £8. Cheetah "Sweet talker" £20. ZX81 16K Rampack £7. Tel: (0232) 231716.

ORIC 16K, boxed. 4 months old, 5 arcade games, 2 bks, excellent condition £60 ono. Tel: 674 3112.

QL FOR SALE, brand new. Offers. Ring 573 6442.

SHARP MZ 700 computer, complete integral cassette deck. Printer Plotter, s/w. Spare pen & paper for plotter. Boxed as new. £275 ono. Tel: 01 863 0198.

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TRS 80 level I basic lessons. 4 cassettes £5. MFI computer desk, £10. Must collect (Swindon) 0793 870827.

ORIC 1 48K, as new and software, including Harrier Attack, Donky Kong, Dracula's Revenge plus three other games. Only £130. Tel: (0705) 528692.

ORIC MCP40 printer. Complete with roll of paper. Used only once, hence excellent condition. £100 ono. Tel: 0706 31239.

ZX PRINTER + rolls of printer paper. Will swap for Currah Micro Speech or sell for £35 ono. Telephone Hornchurch 57487.

TEXAS TI 99-4A speech synthesizer £35. Pirate Adventure Game with Adventure Module £15. Tel: Horsham (0403) 55060.

SEIKOSHA GP100A Mk II printer for sale. Hardly used, excellent condition. Five months guarantee, only £140. Phone 0792 68894 any time.

FOR SALE Electron joystick interface in perfect condition, unused. Only £15.00 ono. Write to: 46 Southwell Close, Kirkby in Ashfield, Notts, for details.

CURRAH SPEECH pack: excellent condition £20. Or will exchange for ZX printer. Tel: Ferndown 897016.

SOFTEK SPECTRUM integer compiler in video box with instructions, £7. Over £50 worth of mags including PCW, HCW, Sinclair User, Your Computer, Electronics and Computing for £15. Tel: Loddon 20219.

CASIO FX 700P pocket computer, calculator. In excellent condition. Only 4 months old. £35 ono. Phone Dave at Heathfield (04352) 2505 evenings.

ORIC ATMOS 48K new, boxed, bargain at £130. Also Oric Software, PSS, Invaders, Hopper, Centipede, £12, 1JK, F/Quest, Xenon 1, Z/Revenge £15, Hobbit, £8, Tansoft, U/Zone, Rat Splat, £10. Tel: Dave (0268) 559085.

TI 99/4A peripherals required. R5232 card, internal disk rive, disk manager and controller, editor assembler, p-code card, assembler linker, and editor filer. Phone Neville on 0703 538155 from 9am to 7pm.

CASSETTE TAPES, individually boxed, C-60 pack of ten. Good quality unused, unwrapped £3.00 only. Alton 87844 after 5.00 pm.

SHARP MZ-700, 64K ram, built in cassette, and clock, five games, all for £175. If interested contact J. Martin, 11 Rosina Street, Higher Openshaw M/C.

ZX PRINTER for sale (£28) or will swap for Currah Speech unit. Four rolls of paper and printer (£37). Mr K Burton. Tel: (0226) 292118.

VETREX COMPUTER system, duplicated gift, unused, still boxed. No TV needed. With 6 superb games. cost over £200, bargain at £120 ono. Must sell. Tel: 01 642 8478. Sutton, evenings.

HEWLETT-PACKARD HP-41C computer and calculator hardly used. Absolutely as new. Includes handbook, programming guide, standard applications, quick reference etc. Original box. £75 or swap for Vic/CMB/Pet (0244) 675717.

ZX PRINTER for sale. Little used. 9 months old. Manual + 7 rolls of paper. Worth £55, sell for £30. Phone Chris on (0788) 832478 after 5pm. Write to: 4 Cord Lane, Easenhall, Rugby, Warwickshire, CV23 0HZ.

48K ORIC 1 plus £110 of software including The Hobbit, Forth, Hunchback etc. £130 ono, or swap for Commodore 64, tel: Wigton (0965) 42247 after 4pm.

QUICKSILVA games designer original as new £8. Phone 0933 222543.

SORD M5 — lots of original software for sale — send SAE to A Hinkly, 5 Greenfield Link, Coulsdon, Woods, Coulsdon, Surrey CR3 2SW for details. I'll also consider swapping programs.

CURRAH MICRO speech hardly used £24. Deathchase, Pinball Wizard, Ant Attack, Zip Zap, Timegate and Star Trail £3 each, £15 the lot. Phone 0905 21871.

ELECTRON CASSETTE games for sale. All originals. Moonraider, Croakter, 747 Flight Simulator and Escape from Moonbase Alpha. £17 the lot. Phone Kings Lynn 828872 after 4pm.

ORIC I, 48K brand new, unwanted gift. Guaranteed £85. Tel: Ashford, Kent. 20483 eves.

CASIO FX 702P pocket computer SAR cassette interface. FP10 printer original box. £80 or best office. Tel: 01 902 7402 after 5pm.

ITT 2020 48K, 2 Apple disk drive s/w + bks. Best offer. Over £350. Tel: after 6pm 69613.

ZX MICRODRIVE + interface I. As new. £85 ZX printer. Rolls of paper £20. Tel: (0908) 613900.

MCP 40 4 colour printer plotter, 1 month old, boxed + instructions £100. Tel: 0432 271276 after 6pm.

400K DISC DRIVE for sale with over £1000 of BBC s/w (call original) ie: Disc Doctor Rom, business + latest games. £1000 + sell for £450. Tel: 05827 69152.

16K SOLID side wags Ram board for BBC supplied with ond £1500 most roms eg wordwise etc. Worth over £1500. Sell £150. Tel: 05827 69152.

PCW BACK issues also HCW, PCN some monthlies. Tel: 0259 60840 (after 6pm).

INTELLIVISION games less than ½ price. Also imagine games swap for new ones. Tel: 01 958 8643 Andy. All original.

TEXUS T1994A + cassette + interface leads, Joysticks + cartridges + cassettes + program books. £150 ono. Tel: Orpington 37885.

MCP 40 colour printer, plotter wider, 3 months old. Hardly used. Original boxes. £100. Tel: Southend 552 484.

PHILIPS G7000 6 cartridges best offers. Ace tronic + Atari cartridge £8 each. Tel: 01 885 1185.

TEXUS T199/4A Joystick, tape recorder 4 modules ie: Chess, Munch Man, Beginners Household Management. Perfect condition. £50 ono. Tel: 01 586 8876 eves.

WANTED 48K Spectrum, pay £60. Tel: Pod 01 348 7378.

EPSON HX20 with micro cassette £320 and brother EP22 (Typewriter/printer) RS232 £100. Tel: 01 733 9961.

EPSON FX80 Hi-Res Dot Matrix top of range. Perfect. Guaranteed owner upgrading. Only £330 ono. Tel: 01 674 7795.

SHARP MZ80K. 48K built in monitor and tape recorder. Basic language manual, book and various tapes vgc. Boxed £220 ono. Tel: 0632 836110 Newcastle.

FOR SALE HCW nos 1-24, 27-33, 35-50. 15p + 15p p&p each or the lot for £4 + £1 p&p. Write to K.L. Chan, 9 Cornmarket, Thame, Oxon, OX9 3DX.

SEIKOSHA GP 100 A Mark II Dot Matrix printer. Centronics compatible. £160 incl. delivery. York 490109. Hardly used.

FOX PROGRAMMABLE joystick interface for Spectrum + Quickshot II Joystick. Excellent condition. Together £46. New, accept £23. Tel: (061) 336 3841 evenings.

TI 99/4A EXPANDER, Basic, games cartridges, joystick, books, mags, s/w, leads, excellent condition. £100. 0494 716590 after 5pm.

ORIC 48K tape recorder, £70 & s/w inc: Hobbit + Oric Trek + Books, leads, £140 ono. Tel: Simon (0274) 726166.

MEMOTECH MTX500 computer, 5 mths old boxed + guarantee, 8 tapes, cassette recorder, Quickshot joystick, £300. Tel: Lisburn 75452.

DOT MATRIX printer 80 column graphics. Character and double width mode. Switch selectable input. Parnelle or serial interface. Suit most computers. As new £185 or no. (0602) 725930.

ORIC I 48K + S/W worth £100. All leads + manual, books, guarantee. John 0625 879064. £99.00.

SHARP 1245 pocket computer, 4 weeks old. £30.00. Tel: 01 521 1058.

FOR SALE. Stonechip programmable Joystick interface (still under guarantee) plus pointmaster joystick £25.95. Phone Rob 061 928 8354.

SELLING BROTHER EP20 Electronic Typewriter for £75. Very little used. Built-in calculator and LCD display. Includes foreign characters. Battery or mains operated. Would swap for microdrive and interface. Dave 01778 5673.

LYNX 48K + S/W. Highest offer secures or exchange for CBM disc drive. Tel: 01 691 0118.

ACE TRONIC MBU 1000. 3 cartridges £25. Casio MT. 45 £60. Tel: 01 809 2841 K T Cheung.

ORIC 48K book + cassettes inc: machine code Forth and HunchBack sell £90.00 Tel: 01 393 8550.

ORIC 48K with lots of s/w boxed games worth £200. Excellent condition, sell for £100 or swap for Spectrum 48K with Accesories. Tel: Southport 321 44.

LYNX 48K, boxed as new, unwanted prize. £150 ono. Tel: 01 570 8335. Bob Harris.

SEKOSHIA GP50 printer Centronics new. Not used. £125, Maby interface for Election. 01 771 0695.

TI 994A manual + games for sale. £55 ono. Tel Medway 6334.

FOR SALE or exchange motor roller 01 kit for microdrive and interface or best offer. Mr Morgan 0685 878645.

COLLECTION OF S/W. Many titles inc: Lunar Jet Man, dictator, Pogo, Derby day, Molon Maul. Offers to Hertford 52591 (Nigel).

ORIC I original s/w ie Hobbit £700. Ultimazone £4.00. Munch £4.00 + more. Tel: 0625 877496.

TEXUS TI99 4K, 2 powerful languages. Extended Basic. Many memory £60 of s/w. Joystick, cassette, leads. Good condition. Manuals. Worth £300. Sell £120 ono. Tel: Basildon 557585.

FOR SALE, Vetrex computer games system, with full sound and speech synthesis, including 5 cartridges, Scramble, Hyperchase, Pinball, Soccer, Starhawk, Minestorm. Paid over £200. Want £150 ono. Tel: 01 642 8478 evenings.

SHARP MZ 80K. Integral monitor and cassette deck. 48K ram. With centronics printer interface and £230 of software. All for £250. Phone (evenings/weekends) Manchester 439 4841.

FIREHAWKS AND SIEGE by Postern for any Spectrum. Only £3 each or £5 both. Blind Alley by Sunshine for any Spectrum only £2.50. All in v.g.c. Ask for Matthew 050 270 339.

Good quality printing ZX printer complete with two rolls of paper and servicing information. Fully boxed and reliable. £30 ono. Phone Bakewell 4121 after 4pm. Will deliver within reasonable distance.

MICRODRIVE and interface 1 for Spectrum. 2 extra blank cartridges and book. £95. Tel: Mansfield (0623) 742984.

FOR SALE: two ZX microdrives brand new. Only three weeks old. Have to sell. Ordered QL. £35.00 each post paid. Phone 0226 82645.

FOR SALE: Brother EP20 personal electronic printer. Boxed as new. Cost £158. First with £85. Post paid. Phone: 0226 82645.

CURRAH micro speech as new. one week old. Unwanted birthday present, worth £30. Asking for £25 ono. Phone Glasgow (041) 429 2803 between 5 and 7pm ask for Jaz.

SHARP MZ80A as new. Plus some software. £250 ono. Phone Scarborough (0723) 369609 after 6pm.

ORIC 1 48K several games and books. Worth £200. Will sell for £120. Contact Grahame on (061) 477 9076 after 6pm.

LYNX 48K as new. Boxed with manual and leads. Also includes Serial Printer software pack and Sinclairs 'Lynx Computing' book. £130 ono. Telephone Coggeshall, Essex (0376) 62630.

COMPETITION-PRO Joystick V.G.C with box. To fit any system with a nine pin D-plug. £5.00 ono. Tel: 0291 690 840.

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IMPUT by What magazines. Every issue (11 copies) + binder, £13.00. Tel: Romford 67413.

SHARP MZ80K 48K memory, inc tape deck + monitor with manuals + £80 of s/w. £200. Tel: (0284) 66219.

LYNX 96K little used, manuals, £210 ono. Tel: 01 788 4951.

ORIC I 48K + micro line 82' printer + cables £200. Tel: Dartford 214433.

ORIC ATMOS s/w for Atmos. Send SAE for latest list. s/w urgently wanted. Best prices paid for original s/w. Same day secures. Table top s/w, 27 Giffard Drive, Walland. Malvern, Worcestershire.

COMPUTER CASE similar Superbrain built in VDU, RS232, centronics 100 key keyboard, power supply, 8085 CPU board, etc. Would exchange. What have you got! Tel: 061 432 4538 evening/weekend.

ONE ACOUSTIC modem plus Rom software for sale. Four months old very little use. Price £40 ono. Phone 01 748 0320 evening only not Wednesday.

COLECOVISION CARTRIDGES for sale, Venture £15, Ladybug £15, Popeye £20, Q Bert £18, Zaxxon £17, Mouse Trap £15, Donkey Kong Junior £17, or £100 the lot. Phone 01 7014380.

48K LYNX + loads of software, magazines, cassettes, etc. Serial printer pack, Lynx users, Dust cover. Worth £350. Only £170 ono. Phone 042275366.

Wanted

WANTED Fuller FDS keyboard. Tel: 0705 473968.

SWAP Lunar Jetman or CDS Pool or Chuckie Egg for your Classic Adventure of Crypt or Thrusta or Bugaboo (The Flea). Spectrum only. Phone Rich after 4.30pm weekdays. Bristol 0272 716947.

SWAP VIC 20 Road Race Cartridge for a Vic 20 Cosmic Cruncher cartridge in good condition. Kettering 522581.

SWAP CB plus all accessories needed for home or car, and C-Scope TR400 metal detector for any computer (not ZX81) or Atari peripherals. Tel: 01-300 1596 after 5.00pm or weekends.

WANTED Cambridge program interface. Will swap for s/w Kong. Zzoom, Ah Diddums, Timegate, many other titles. Other titles for sale or swap Kempston interface. Tel: BFD 635068 after 7pm.

SPECTRUM originals games s/w to swap. ie Astra, Table Trouble, Pystron, Scarblitz, defender. Tel: 01 530 5220.

WANTED DISC for CBM 64 games on original or blank. Pay cash. Also swap. Tel: 01 958 8643. Andy.

WANTED 1541 disc drive. Good price paid. 061 222 61917.

SWAP (ORIGINAL) Oracles Care + Espionage Island for any level 9 adventure. Ray Penford 67307.

WANTED BBC Tel: 01-519 2579 (6pm).

SWAP Invasion of the Body Snatchers (Crystal wanted) swap my original s/w for yours. Tel: Ammansford (0269) 4259 eves.

SPECTRUM 48K good condition. £90.00 of s/w. All top games (all originals) like to swap CBM 64 or Atari 800 XL. Tel: Chipping Sodbury 310 278 (0454).

CBM 64 + C2N books, mags, s/w 4 months old £220 ono. Will consider swap for 48K Spectrum with accessories. Tel: Slough 32750.

WANTED 16K ram pack for the Vic 20 and Quickshot joystick. Tel: 01 551 3286.

SPECTRUM 16K with £35 of s/w. Joystick interface, cassette player, lots of magazines and 40 channel CB + aerial power pack, and SWR. Swap for Commodore 64. S/w required. Tel: (0582) 599576.

WANTED Spectrum software in any form original programs or anything on tape for 48K. Please send list and price to A. Stewart, 11 Strack Place, Elrick Skene, Aberdeen, Aberdeen 742358.

SWAP VIC 20 super screen for games designer or snooker. Also Cosmiads for Gridrunner. Write to Peter Hobden, 13 Swallow Beck Ave, Lincoln. LN6 7EZ. Tel: Lincoln 691146.

WANTED Commodore 64 plus C2N. Disc drive joystick and printer (8" or over). Tel: Rossendale 216238 after 4pm.

WILL SWAP 15 original Spectrum games worth £85 for interface I and micro drive. Also will pay £20 cash difference and pay for micro tapes. Tel: Grangemouth 486120.

WANTED SIMONS Basic for CBM 64. Swap Tasco Zoom telescope 20 × 60 × 60 on tripod. Worth £60 or may consider buying. Phone Ingrebourne 76431.

TEXAS SWAP personal record keeping module for speech synthesiser. Also swap Statistics module for extended Basic module or Parsec module. Please contact Wayne Learoyd, 105 Wellstone Avenue, Bramley, Leeds LS13 4EH.

WANTED SPECTRUM software, Alchemist, Vu-3D, Scuba-Dive, Android II, Codename Mat, Hall of the Things, Backgammon, Scrabble, Blade Alley, Oric Attack. Tel: 01 874 8194 (Sanjay).

SWAP Brand new 48K Spectrum, joystick interface + £600 s/w for Commodore 64. No cassette deck or s/w needed. Phone Scot on 075 70441 (Scotland).

SWAP s/w (Spectrum) for Kempston interface. Tel: 074 488 2305.

CBM 64 in good condition. No extras. Mr Riley — Tel: 061 980 4357.

DRAGON 32 2 joysticks, £50 of s/w. Swap for Spectrum 48K with extras. Tel: Whitland 240663.

48K SPECTRUM wanted with compatible tapes recorder, leads and manual with at least 5 months guarantee. Willing to pay upto £100 if games included. Tel: 01 980 0731.

I'M WILLING to purchase all original Spectrum s/w. Preferably in bulk. Good prices paid. Tel: 01-348 7378.

WANTED VIC 20 + C2N cassette. No s/w. Willing to pay £80/90. Basildon 282035.

SWAP ZX MICRODRIVE for Alpha Com 32 printer. Games designer and Vu-3D. For Tasman word processors. M/Orsie version. Tel: H/H 66641.

WANTED reject or non-working computer for small child. Tel: 0493 740951.

48K SPECTRUM Quill to swap for The Hobbit. Tel: Carnoustie 53131.

WANTED broken Spectrum for taking parts. Tel: 01 539 5402 after 6pm.

2 CB RIGS 40 channel, 1 Power Pack, 1 Oscar Ariel. 1 SWR. All good conditions. Swap for 48K Spectrum. good condition. Tel: (0403) 67296.

SWAP SPECTRUM s/w, Jet Set Willy, Astrada, Moon Alert (original). Tel: 01 476 8884 (after 6pm).

COMMODORE 64 software to swap or sell. Titles include Colossus, Chess, Zeppelin, Critical Mass and many more. Contact A Gerard, Boite Postale no 116 Liege X Belgique. (All letters answered.)

SWAP SPECTRUM education s/w. Paddington shopping and picture problem. Sinclair read one, ABC lift-off, Alphabet and countabout. 01-800 6767 after 7pm. or weekends.

WANTED KEYBOARD for Spectrum in good condition. Tel: Bradford 503332 after 6pm.

SWAP VIC 20 + 7 cartridges + 9 cassettes + joystick + cassette deck for an Apple II, II+, IIE. Tel: (Airdrie) 61010 and ask for Alan.

SWAP 48K Oric I + £40 software + 1 Book for Casio PB100 + £70 or sell alone for £100. Phone Stafford (0785) 211445.

WANTED. T199/4A extended basic cartridge, joysticks, any other hardware? Phone 0482 868395 after 5.30pm. Ask for Mike.

SWAP VIC 20, cassette recorder, joystick, Intro to Basic Part I and software worth £60 for Acorn Atom (12K + 12K) or sell £110. (Any computer considered for swap). Telephone 051 678 2257 (Merseyside).

WANTED COMPUTE! (US magazine) March 1983 to February 1984. Will pay cash or swap unused Commodore 64 software. Tel: Tyneside 4106600 (eves). Ask for Paul.

SWAP TANDY PC4 pocket computer with Rampack, printer, cassette, interface, all in case, 6 months old for Centronics, printer for Dragon 01 908 0519 evenings.

WANTED SPECTRUM 48K in good condition, willing to pay £50-60. No games needed. Please ring 01 5395402 after 6pm.

WANTED TO BUY or exchange, ZX81 tapes. Send your offers to John Walton, 26 Lord St., Little Lever, Bolton. All letters answered.

WANTED Cambridge Computing programmable joystick, plus interface, plus cassette. Must be in good condition. Will pay £18. Tel: Motherwell 0698 69151.

SPECTRUM ORGINALS. Oracles Cave, Pitman Seven, Zzoom, Colossal Caves, The Island. Swap the lot for the Quill by Gilsoft. Write to Douglas Duttin, 1/4/1 Muirhead, University of Stirling. Stirling, Scotland.

WANTED, QUILL + instructions in swap for Psst, Cookie, Trans Am, Ostron, Gangsters, Turbo, Urgent. Tel: Conn on 868 4124 after 5.30. Will not wait long.

SWAP WATCH (Charlton) for any adventure for Dragon 32. Tel: 01 397 8017.

WANTED COM disc drive. Tel: 0204 694407.

IF YOU OWN Cambridge Computing joystick or Vu-file or Jetset Willy please phone me now on Staines 57086 and ask for Farley. Software for sale too. Any problems are also answered.

LOOK Look educational 48K Spectrum software. Send SAE for list. Approx ages 7-13, Workhouse, 37 Lodge Rd., Walsall or Tel: 021 357 2889 for immediate dispatch.

WANTED COMMODORE disc drive for about £120. Tel: Longfield 4976.

WANTED AQUARIUS tape recorder. willing to pay £30-40. ring after 5pm. Ask for Nathan. Phone Stafford 3450.

MANIC MINER addicts. Now you can visit any room, swap rooms in mid game only £1. Send cheque or P/O to Mark Hartley, 8 Dawn Close, Chatto Heath, St. Helens, Merseyside.

WANTED 48K Spectrum. Willing to pay £80. Tel: Stafford 780248.

CBM 64 software to swap. Titles include Colossus Chess, hard hat Mack. Fort Apocalypse and many more. Contact A. Gerard, Boite Postale, No 116 Liege X Belgique (all letters answered).

SWAP GRIFTER XL bike excellent condition, for these C64 games: Grid Trap, Manic Miner, Aztec Challenge, Revenge Mutant Camels, Scope, Kong. Ring (021) 554 2631 (or swap for Adman Speech, Scope.)

WANTED 48K Spectrum issue 3 will pay £60 ono. Contact Andrew on Basingstoke (0256) 795897 after 6pm.

ZX81 AND Spectrum s/w swap: ZX81 s/w for sale or swap for Spectrum s/w: Football Manager, Asteroids £2 each. Also swap Spectrum tapes: Dallas, Derby Day etc. For Lothloriens. Jeff 021 779 3026.

WANTED 48K Spectrum issue II with leads and manual, with or without tape recorder. Will pay up to £70. Tel Basildon 22081. Must be in Essex.

SWAP DRAGON 32, for Spectrum 48K, Oric-1, 48K, or 32K Colour Genie. W.H.Y. Tel: Luton 421534 or write, Paul, 4, Ridgway Road, Luton, Beds, LU2 7RR. Sell £95.

TO SWAP Sony Walkman for ZX81, 16K and typewriter keyboard or sell for £50. Ring Terry, on Runcorn 68548.

SWAP SPECTRUM games. Tel: 01 567 9490 after 4.30pm.

WANTED SPECTRUM s/w no ancient titles required. I will swap or buy. Tel: Paul Harpenden (05827) 60061.

WANTED 16K Rampack for ZX81. Tel: Ringwood. 79226 (Hants).

WANTED CBM 64 s/w to swap. Tel: Northwood 26322. Or send SAE 16 Lynxway, Northwood, Middlesex HA6 2T3.

SWAP or sell CBM 64 disc or cassette games (original). Tel: 01 958 8643.

SPECTRUM 48K wanted. Recorder not needed. Will exchange for Phillips G7000 Videopac games Computer + 2 cartridges + £70 cash. Tel: 0491 35849 after 6pm.

SWAP DRAGON 32 plus £250 software, joysticks and manuals for 48K Spectrum or any micro plus software or sell £240. Tommy Walsh, 38 Glenglora Drive, Paisley, Scotland 041 884 5628.

WANTED Aquarius full sound colour computer with 16K ram, plus leads, boxes. Manuals etc. Will pay £35-£40. Tel: Barry (0446) 736131 after 4.30pm.

SWAP FOUR top 16K Spectrum games for working 16K ZX81. Write to 100 Downhall Road, Rayleigh, Essex SS6 9LT. Urgently please!

DRAGON OWNERS wanted to swap programs and information for the Dragon 32/64, contact Tom 3 Wantage, Woodside, Telford, Salop TF75PA. or telephone Telford 581237.

SWAP OR SELL my Fuller music synthesiser for Currah micro speech or will accept offers over £35. Telephone Hornchurch 57487. I'll also add over 60 issues of PCW to above.

SWAP new Dragon 32 + Joystick and £100+ software for 48K Spectrum. Any offers considered. Will sell for £190 ono. Tel: 794 6230 preferably evenings.

WANTED URGENTLY Vic 20 Super expander cartridge. Must be in perfect condition with instructions and packaging. Will pay up to £20. Andy Sheppard, 32 Gorse Street, Stretford, Manchester M32 0HZ

WANTED SINCLAIR User mags number 1 to 14. Must be vgc. No barmy price please. Also ZX Computing pre June 83. Jim Wood, 28 Hough Road, Kings Heath, Birmingham 14.

SPECTRUM software, PSST, Lunar Jetman, Atic Atac, Leapfrog Knot in 3D, Jungle Fever, Jumping Jacks Spectral Panic. Sale £3.00 or swap. Upminster 26754.

BBC MICRO swap s/w. Pref N. London. Tel: 01 354 2674.

WOULD ANYONE be willing to donate any computer hardware to a computer club? Write to Towcester Computer Users Group, 20 Wordsworth Close, Towcester, Northants.

WANTED original 16/48K Spectrum software, particularly: Quill, Scope, Games Designer and any good Arcade/ Adventure games. Also good copy of Zaxaan required. Tel: (0362) 4497 with details and prices.

NATIONAL ZX Spectrum user club bi-monthly newsletter. Many software offers subscription £2.75. Write to Guy Fullalove, Woodcotes, Camer Park, Meopham, Kent. CA13 OXS or phone Meopham 812719 after 5pm (A/F Guy).

SWAP SPECTRUM s/w ie, Sabine Wolf, Antics, Stop the Express. Phone John after 6pm, 01 476 8884.

SWAP TI99/4A, cassette leads, books and software (total value £130) for 16/48K Spectrum or Sharp PC 1500 and cassette interface (other computers considered). Phone Clive, on Portsmouth 691163.

VIC 20 S/W Arcadia Escape MCP Snowstorm Bewitched to swap for super expander or 8K rampack or joystick. Ring after 4pm. Ask for Tim. I would like to buy Flight 015 for £3.50 ono or swap. Tel: Co. Durham 527752.

WANTED BBC B or CBM 64 + tape deck to swap. I have Yaesu FRG 7700 comms receiver + ATU, 30 MHZ still boxed. Used once. Worth £370. Tel: Paul Peterborough 70223.

REALLY CHEAP technique to save valuable time when typing Spectrum programs. Send name and address to PSB, 10 Linden, Canvey Island, Essex 858 9JA (SAE for fast reply).

QL. Yes — Sinclair QL!!

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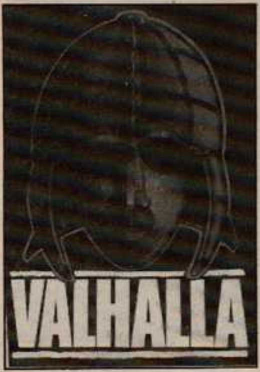
SUNSHINE

CARTOON GIANTS

Valhalla is now available for the Commodore 64. On the Spectrum the game wiped the floor with just about all the other Christmas releases and won Game of the Year in at least a couple of award schemes. You might say that Legend are moderately confident about the program's chances on the 64.



For a general overview of the game which is not easily summarised, you'd best refer to the various reviews/Streetlife which *PCW* did around November last year, when the Spectrum version was first issued. Suffice to say it isn't quite like anything else and is probably best characterised as Legend themselves characterise it, as a computer movie in which you are the most important but not the only character.

There was much anticipation as to what the extra memory and graphics facilities on the 64 would mean to the overall look of the game, Graphically, what extra colours, better sprites, and no colour resolution problems has meant is a game that looks even more like a cartoon — the giants lumber along most convincingly and the Raven smoothly flaps its wing.

These changes add quite a lot to the game but perhaps nothing really crucial, what is crucial is a general 'speeding up' of the action — this is a version of *Valhalla* you can't leave for a second lest something gets stolen or you get killed. I suspect this is a deliberate attempt by Legend to combat the 'bystander' syndrome in which people tended to simply sit and watch the action rather than take an active part. For example, objects that happen to be lying around like rings, wine, food, etc are far less likely to remain for long in this version — if you need to drink you better type in your instruction quickly because otherwise you can be sure one of the other characters will happily take it.

I think it is pretty safe to say that *Valhalla* on the Commodore is a better game not, primarily because of the graphics, but rather because of the change of pad. If I have a quibble it is that the excellent sound of the 64 is not more widely used to provide some sort of continuous soundtrack — done correctly I think that might have moved the computer movie concept one step further still, but nevertheless Valhalla remains a unique and important game and Commodore 64 owners should beg, borrow or steal the money to get this one.

Program	*Valhall*
Price	*£14.95*
Micro	*Commodore 64*
Supplier	*Legend PO Box 435 Station Road London E4 7IX*

RELIEVING LIFE'S BOREDOM

Block Buster is a quiz game for one or two players in which a series of general knowledge questions are asked by the computer.

Such games are usually dreadfully boring, but this one has some nice features — you can interupt just as in real quiz games if you think you know what the whole question is and are sure of the answer.

One player controls one set of coloured blocks, the opponent the other — for each right answer you can build an extra block and eventually cross the screen.

The program comes with an extra tape of data for additional questions and retails for a suprisingly reasonable £5.95.

Program	*Block Buster*
Price	*£5.95*
Micro	*Spectrum*
Supplier	*Compusound 32 Langley Close Redditch Worcs B98 0ET*

Pick of the week

LOW-LEVEL FLYING

Tornado Low Level is the latest release from Vortex software, famous for *Android's 1* and *2* and it is marvellous, more than that, it has some of the most impressive 3D graphics I've ever seen on the spectrum. In fact, apart from the sound, it could easily be a Commodore 64 game.

The general idea is a little like Virgin's *Falcon Patrol* — you control a swing wing fighter which you pilot, refueling where necessary, to various targets depicted on a large scale map. This means zooming over a landscape at low level watching out for tall buildings and not getting lost. The sense of speed is spectacular as is the shadow of the aircraft which behaves exactly as a shadow should, (you'll have to see the game to understand what I mean).

It's exciting and technically breathtaking — how much more can anyone get out of the Spectrum? Any chance of a version of *Zaxxon* using the same techniques, Vortex?

Program	*Tornado Low Level*
Price	*£5.95*
Micro	*Spectrum*
Supplier	*Vortex 280 Brooklands Road Manchester*

BOOGIE ON DOWN

Quicksilva, despite the wheeling and dealing surrounding them, are still very much in business. Of its most recent batch of releases one of the most unusual is *Drum Kit* for the BBC.

QUICKSILVA
Author
MARTIN GLASS
DRUM-KIT
RUNS ON BBC MODEL B

As the title suggests what you get is a program that enables you to use the sound chip on the BBC as a rhythm box and a pretty good one at that.

You control sounds labelled (reasonably convincingly) snare, bass drum, and a couple of toms, one of which has the authentic da da da dwong, sound beloved of many a pop hit. The program is easy to use, with where the beat will fall, in relation to the other instruments, being illustrated on screen which scrolls as the rhythm is played.

You can change both the pitch and the relative volume of each instrument — constructed rhythms can be saved and loaded at will. It's excellently designed; now all you need is something to play along with it.

Program	*Drum Kit*
Price	*£9.95*
Micro	*BBC B*
Supplier	*Quicksilva Palmerston Park House 13 Palmerston Road Southampton Hampshire SO1 1LL*

INSTRUCTION IN CODE

There have been various attempts at producing an effective teach yourself machine code program, but the subject has remained as elusive as ever. By far the best attempt comes from New Generation Software who has recentlyissued its *Complete Machine Code Tutor* for the BBC and the Spectrum.

The package consists of two

cassettes and a short booklet although most of the text is actually on the program. There are essentially two elements to the cassettes — 33 lessons covering every instruction the Z80 can accept and a screen simulation which illustrates exactly what happens after every instruction and can be considered as a sophisticated one step assembler.

The Complete
Machine Code Tutor

After each section there are a series of exercises — they start easy enough for even me to understand, so all five year olds should find it a doddle. One other good point — unlike all the books I have seen on teach yourself machine code — this does not jump straight in with hex arithmetic which, being far more difficult than everyone always pretends, puts a lot of people off.

Program	*The Complete Machine Code Tutor*
Price	*£14.95*
Micro	*Spectrum, BBC*
Supplier	*New Generation Software 15 Sunnybank Lyncombe Vale Bath BA2 4NA*

WAHS AND WOOSHES

Star Trooper is the latest release from Melbourne House and is, somewhat surprisingly, not for the Spectrum. It's a high speed ker-pow ker-pow which loads in three minutes using yet another high speed loader. To digress for a moment, with the possible exception of multipart games using more than 64K (of which there are very few), the vast range of turbo games is making the standard Commodore disc drive look pretty silly — only of use to a few business orientated users. Turbo games are loading more or less as fast as on disc for no extra cost on an ordinary tape price.

To get back to *Star Trooper,* the only thing really to be said is it's simple arcade stuff, dodging endless varieties of aliens but still good for all that. What I did like was the extensive music soundtrack that really does make the 64 sound like a synthesizer, being full of the kind of wahs and wooshes that made Vangelis the man he is today.

Program	*Star Trooper*
Price	*£6.95*
Micro	*Commodore 64*
Supplier	*Melbourne House Church Yard Tring Hertfordshire HP23 5LU*

KEEP 'EM PEELED

Mirrorsoft has earned my continuing approval on the strength of the marvellous *Caesar the Cat* arcade game, but in fact the bulk of its release have been educational programs.

Look Sharp is available on the Commodore 64 — a machine not supplied over abundantly with educational material — and it basically concerns itself with visual memory and observation. In *Old Macdonald's Farm* (the first part of the package) the child has to remember a farmyard scene and detect subtle differences between different animals.

MIRRORSOFT
LOOK
SHARP!

The second program is called *S.O.R.T.* and is basically a hand eye co-ordination exercise — it's educational to about the same degree as *Pac Man.*

Program	*Look Sharp!*
Price	*£7.95*
Micro	*Commodore 64*
Supplier	*Mirrorsoft Holborn Circus London EC1*

INTERIM REPORT

Speaking as someone who never got over Bakunin's betrayal by the Trots at the first international congress; as someone who believes that a free state economy would produce cooperation rather than a male hierarchical outmoded concept of competition; and as someone who can only deplore the bastardised mish mash of competing class derived concepts that is the mixed economy in this country, that such an economy should be represented in a computer game can only be considered as further evidence of political apathy amounting to a virtual criminal negligence on the part of software houses in this so-called nation.

Having made these crucial political points, I should add that *1984* which represents the British economy and invites you to play Prime Minister, or collective wealding executive power if you prefer, is excellent — for two main reasons. Firstly it succeeds where other simulations often fail, ie, it is very visual, and secondly, it is complex, you really do have to think about the decisions you make.

Wages, Minimum Lending Rate, Government Investments, taxes, public expenditure, foreign aid and industrial grants are just some of the factors you have to take into account — but this being Britain none of your decisions will be implemented smoothly, numbers of special interests will fight for their corner in glorious conflict with one another. Something for ulcers could be a wise additional purchase if you buy this game.

Program	*1984*
Price	*£6.50*
Micro	*BBC B*
Supplier	*Incentive Software 54 London Street Reading*

NUMBERS INTO PICTURES

Figaro 64 is a sophisticated graphics orientated database for the Commodore machine.

FIGARO 64
Saxon Computing

It comes at a sophisticated price too — £75 + VAT which is £86.25 ie a lot.

On the other hand it's a pretty clever program not unlike *Easel* — the graphics package free with the QI. Basically it will turn data — any collection of numbers — into a graph in any of six different graph formats including line, block and pie. It automatically caters for things like negatives, harmonic means, rounding, etc, and will produce graphs on any Epson or compatible printer.

More than all this it can manipulate your figures in a variety of ways to produce forcasts and various sorts of statistic and all this without being difficult to use. In short, wonderful, but expensive.

Program	*Figaro 64*
Price	*£86.25*
Micro	*Commodore 64*
Supplier	*Saxon Computing 3 St. Catherines Drive Leconfield Beverley Humberside*

New Releases is designed to let people know what software is coming on to the market. If you have a new game or utility which you are about to release send a copy and accompanying details to: New Releases, Popular Computing Weekly, 12-13 Little Newport Street, WC2R 3LD.

Top 10

BBC*

1 (3) Fortress	(Pace)
2 (–) Pengi	(Visions)
3 (–) Mr Wiz	(Superiorsoft)
4 (1) Aviator	(Acornsoft)
5 (–) 3D Space Ranger	(Microbyte)
6 (–) Overdrive	(Superiorsoft)
7 (2) Blagger	(Alligata)
8 (–) JCB Digger	(Acornsoft)
9 (–) Trench	(Virgin)
10 (7) Eagles Wing	(Invasion)

*All model B
(Figures compiled by Micro Manangement 0473 59181)

Atari

1 (1) Incredible Hulk	(Adventure International)
2 (6) Jetboost Jack	(English)
3 (–) Caverns of Kafka	(Cosmi)
4 (7) Zaxxon	(Datasoft)
5 (–) Saga 5 The count)	(Adventure International)‡
6 (–) Circus	(Channel 8)
7 (4) Slinky	(Cosmi)
8 (10) Flak	(Funsoft)‡
9 (–) O'Riley's Mine	(Datasoft)
10 (5) Rally Speedway	(Adventure International)*

*Cartridge ‡48K Disc
(Figures compiled by Calisto Computers 021 632 6458)

Vic 20

1 (–) Flight 015	(Ferranti Davenport)
2 (–) Crazy Kong	(Interceptor Micro)
3 (5) Computer War	(Thorn Emi)
4 (3) Tower of Evil	(Thorn Emi)
5 (8) Phantom Attack	(Master Tronics)
6 (9) Sub Hunt	(Master Tronics)
7 (7) Vegas Jackpot	(Master Tronics)
8 (6) Chariot Race	(Micro Antics)
9 (–) Scrambler	(Master Tronics)
10 (–) Undermine	(Master Tronics)

(Figures compiled by Boots/Websters)

Commodore 64

1 (4) Beach Head	(Centresoft)
2 (–) Cavelon	(Ocean))
3 (9) Revelation	(Softek)
4 (–) Pinball Wizard	(CP Software)
5 (10) Solo Flight	(Centresoft)
6 (–) Savage Pond	(Starcade)
7 (–) Heroes of Kam	(Interceptor)
8 (8) Space Pilot	(Anirog)
9 (–) Flight Path 737	(Anirog)
10 (–) Aquanaut	(Interceptor)

(Figures compiled by Boots/Websters

Dragon 32

1 (1) Buzzard Bait	(Microdeal)
2 (2) Cuthbert in Space	(Microdeal)
3 (8) Mr Dig	(Microdeal)
4 (8) Dungeon Raid	(Microdeal)
5 (4) Hungry Horace	(Melbourne House)
6 (–) Kriegspiel	(Beyond)
7 (3) Dragon Chess	(Oasis)
8 (5) Bug Diver	(Master Tronics)
9 (–) The King	(Microdeal)
10 (8) Skramble	(Microdeal)

(Figures compiled by Boots/Websters)

ZX81

1 (2) Planet Raider	(Novus)
2 (2) Krypton Ordeal	(Novus)
3 (–) Scramble	(Quicksilva)
(1) Alien Rain	(CRL)
(6) Flight Simulation	(Psion)
6 (–) Space Raiders	(Psion)
7 (4) Walk the Plank	(Novus)
8 (–) Chess 1K	(Psion)*
9 (7) Mothership	(Psion)
10 (9) Sabotage	(Psion)

All 16K except where indicated. *1K
(Figures compiled by Boots/Websters)

Spectrum*

1 (1) Jet Set Willy	(Software Projects)
2 (–) Sabre Wulf	(Ultimate)
3 (9) Fighter Pilot	(Digitial Integration)
4 (–) Blade Alley	(PSS)
5 (3) Psytron	(Beyond)
6 (4) Chequered Flag	(Psion)
7 (8) Blue Thunder	(Foundry Systems)
8 (5) Jack and the Beanstalk	(Thor)
9 (6) Zaxxon	(Starzone)
10 (–) Scuba Dive	(Durrell)

*All 48K
Figures compiled by W H Smith and Son, London

Books

1 (1) Commodore 64 Programmers' Reference Guide, *Commodore*	(Pitman)
2 (3) Guide to playing the Hobbit, *Elkan*	(Melbourne House)
3 (2) 60 Programs for Commodore 64, *Erskine et al*	(Pan)
4 (4) Step by Step Programming. Spectrum Book 2, *Graham*	(Dorling Kindersley)
5 (7) Sinclair QL Companion, *Allan*	(Pitman)
6 (7) Step by Step Programming Spectrum Book 2, *Graham*	(Dorling Kindersley)
7 (5) Easy Programs for Commodore 64, *Stewart and Jones*	(Shiva)
8 (–) Very basic basic — CBM 64, *Eller Shaw and Schofield*	(Century)
9 (5) Creepy Computer Games, *Erskine et al*	(Usborne)
(–) Very basic basic Spectrum, *Ellershaw and Schofield*	(Century)
(–) Teach Yourself Computer Programming on Commodore 64, *Carter and Huzan*	(Hodder)
(–) Business Applications for Commodore 64, *Hall*	(Sunshine)

(Figures compiled by Bookwise)

Book Ends

NOT SNAPPY

Data Handling on the Commodore 64 Made Easy is not what you might call a snappy title but it's a useful book very much in the 'the Commodore 64 really is suitable for use as a business machine honest gov' style which is popular at the moment.

It concerns itself with all things to do with the sorting, handling, storage and manipulation of data. This involves topics like use of disc drives, sorting routines, string searching and the like and it's yet another area which is poorly handled in the manual — consequently this is a genuinely useful book.

The book is illustrated throughout with a series of diagrams and programs providing a number of useful basic subroutines.

Book	*Data Handling on the Commodore 64 Made Easy*
Price	*£5.95*
Micro	*Commodore 64*
Supplier	*Granada Publishing* *8 Grafton Street* *London W1X 3LA*

COLUMNS

The Adventurer's Notebook is not a book of listings and for the most part contains very little text. What it is, quite simply, is pages and pages of boxes and columns labelled verbs and nouns — the function being to enable people trying to solve adventures to keep sophisticated records of what actions/directions they have tried at each location.

It's a simple idea but I can think of plenty of adventurers who might have use for it as they are trying their fourteenth synonym for unlock and the door is still not budging. It's not all charts — the opening of the book as a fairly good introduction to the subject of adventure and picks out a few of the best.

Book	*The Adventurer's Notebook*
Price	*£3.95*
Micro	*General*
Supplier	*Duckworth* *The Old Piano Factory* *43 Gloucester Crescent*

This Week

Program	Type	Micro	Price	Supplier
Electro Freddy	Arc	Amstrad	£4.95	Amsoft
Alien Break in	Arc	Amstrad	£7.95	Amsoft
Spannerman	Arc	Amstrad	£7.95	Amsoft
Storyline	Ed	BBC B	7.95	Daco
Mystery of the Java Sea	Ad	BBC B	£7.95	Shards
Frac Maths	Ed	BBC B	£6.95	Shards
Science 1	Ed	BBC B	£6.95	Shards
Wonder Worm	Arc	BBC B	£5.95	Thor
Blocker	Arc	BBC B	£5.95	Thor
Pyramid Painter	Arc	BBC B	£5.95	Thor
Desperate Dan	Arc	BBC B	£5.95	Thor
Alice in Videoland	Arc	Commodore 64	£12.95	Audiogenic
Go Sprite	Ut	Commodore 64	£9.95	Mirrorsoft
Monster Maths	Ed	Commodore 64	£6.95	Shards
Poker	S	Commodore 64	£5.95	Tom Pinon
Graphic 1 V	Ut	Commodore 64	£9.99	Zipprint
Superbowl	Arc	Dragon	£6.95	Cable
Operation Safras	Ad	Dragon	£7.95	Shards
Stickman Olympics	Arc	Spectrum	£5.50	Avalon
New Venture	S	Spectrum	£5.95	Falcon
Kosmic Kanga	Arc	Spectrum	£5.95	Micromania
Contract	Ad	Spectrum	£3.95	Newventure
Virus	Arc	Spectrum	£5.95	Orange
Factory	Arc	Spectrum	£5.95	Poppysoft
Clud	Ut	Spectrum	£4.95	Royghic
Moder 80	Ut	Spectrum	£6.95	Seven Stars
Fun to Learn	Ed	Spectrum	£6.95	Shards
Ugh!	Arc	Spectrum	£5.95	Softek
Twilight Zone	Arc	Spectrum	£5.95	Thor
Megafruit	S	Spectrum	£5.95	Thor
Gremlins	Arc	Spectrum	£5.95	Thor
Night Stalker	Arc	Spectrum	£5.95	Thor
Spider	Arc	Spectrum	£5.95	Thor
Mega Fruit	Arc	Spectrum	£5.95	Thor
Clerky	Arc	Spectrum	£5.99	Unique
3D Silicon Fish	Arc	Vic 20	£5.95	Thor
Luv Bug	Arc	Vic 20	£5.95	Thor

Key: **Ad** — adventure/**Arc** — arcade/**Ed** — education/
S — strategy-simulation/**Ut** — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD.

The tail waggles

In the last couple of weeks there have been a number of articles in the computer press saying things like "The Sinclair QL — has it missed the boat?"

These articles will probably have been written by the same journalists who a few months ago went gaga over a couple of demo machines seen from a couple of hundred feet away and a ropey provisional manual. The new articles tell you, in a hushed dramatic voice, how the journalists has discovered problems in the machine which will lead to the downfall not only of Sinclair Research but probably the entire free world.

This situation reminds me of the plot of a film called *No Highway*—it starred James Stewart as a plane expert who keeps confidentially predicting that the tail designs of one type of airliner is unsound. This being a plane in service all over the world, he is attacked by all the airlines and almost locked up — and the tail still doesn't fall off. In the movie at the last minute just before he is carted away, ruined and humiliated, there is a giant crunch and the tail on the test plane he has been waggling by machine hour after hour finally cracks and splits asunder. End of film, scientist vindicated and not a dry eye in the house.

So as I say there are a lot of journalists playing James Stewart. The question is, is the QL's tail going to fall off or not? The reason for writing this piece is that, in my opinion, whilst there is no question the tail has been waggling — just look at the production delays — I think there is still time for Sinclair to do something about it.

The worrying thing is that Sinclair is trying to pretend that there's nothing wrong and talks confidently of having finalised the design of the Rom when, to even the most friendly observer, the tail is still showing signs of movement.

Let me pick out one thing as a classic example of waggle. *Quill*. Here I am, a journalist of sorts who spends much of his time writing articles — I ought to be just the sort of professional, rather than business, user the machine is intended for. More than that, I am disposed to like technology, I don't really have to be convinced that using a word processor is a good idea.

I used *Quill* on a recent if not final version of the QL. It has one big drawback. If you type at anything other than a snail's pace (and I am no expert) you will find that you outpace the rate to which the QL can print what you type to the screen. When writing this is irritating but reasonably harmless. What about when you delete a few words? What happens is that your keypress deletes outpace the screen deletes making you think you have deleted less than is, in fact, the case — consequently you press delete too many times and find large amounts of perfectly acceptable prose disappearing. Whatever Sinclair say, you can't have 'differing viewpoints' about this — it just won't do.

I *want* to like the QL, its basic price/specification is immutable and unchangeable: 128K, plus two microdrives (which are at least better than ordinary tape, whatever else), plus goodish resolution graphics with an OK keyboard for £399 represents outstanding value.

I want it to succeed. I can even live with the silly plastic feet that don't fit properly.

But Sinclair has to stop the tail wagging and start producing the QL in volume. And it would be nice to see some more software for it too.

Graham Taylor

In the swim

Puzzle No 113

A sponsored swim by members of the lower third produced results that were, quite frankly, disappointing. To make the totals *seem* larger than they were the results were announced as follows:

Alison and Ben raised £3.41 between them while Ben and Chris raised £2.87 together. Chris and Derek's total was £2.23 and Derek and Elizabeth managed to raise a combined total of £4.68.

Now, I also happen to know that the total sum raised by Alison, Chris and Elizabeth came to £5.18.

Can you say how much each child earned *individually*?

Solution to Puzzle No 108

We need to find an exact multiple of 11, in which no digit is duplicated and which is "just over a million". Therefore the smallest such number found will be the logical answer. In the program we test each successive multiple (smallest being 9304153 * 11) to see if there are digits in the answer which occur more than once. (Note that, for convenience, we convert the sum to cents — rather than dollars and cents.)

```
10 LET N = 9304153 20 LET T = N * 11 30 LET
T$ = STR$ (T) 40 FOR W = 1 TO 8 50 FOR X =
W + 1 TO 9 60 IF MID$(T$,W,1) =
MID$(T$,X,1) THEN GOTO 110 70 NEXT X 80
NEXT W 90 PRINT "AMOUNT ON CHEQUE
=";LEFT$(T$,7); ".";RIGHT$(T$,2) 100 END
110 N = N + 1 120 GOTO 20
```

Thus the prize amounted to $1023475.86.

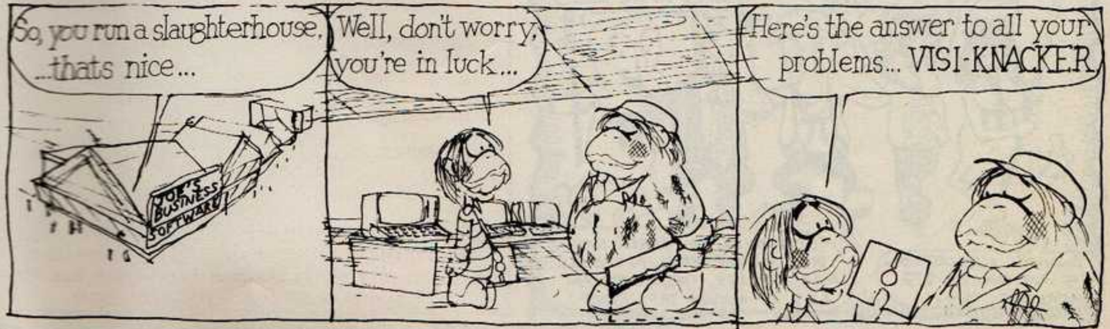
Winner of Puzzle No 108

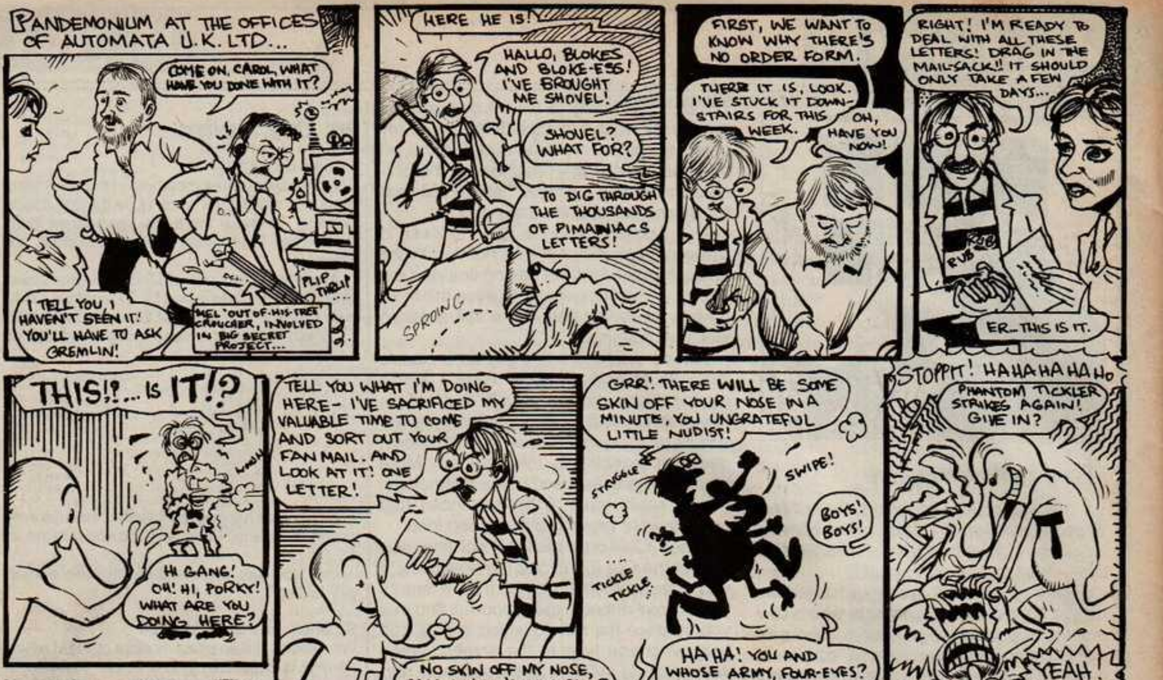
The winner is: G L Godman, Woodfield, Shuthonger, Tewkesbury, Glos., who recieves £10.

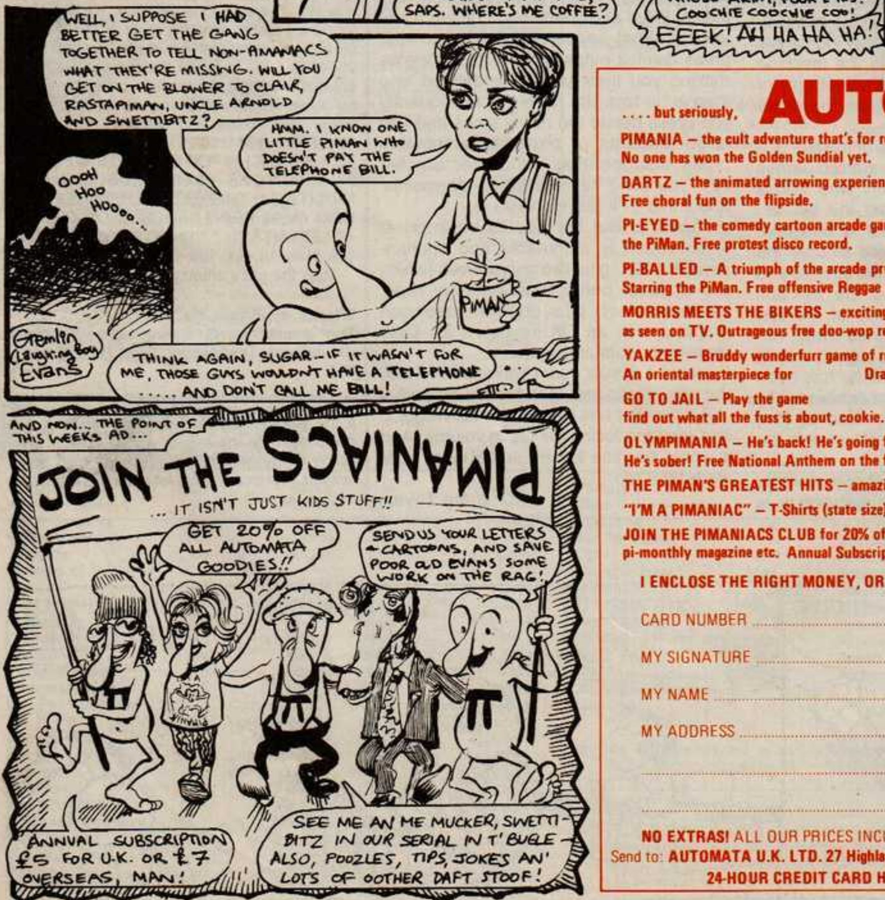
Rules

If the puzzle can be sensibly solved using a computer then the winner will have included a listing of the program used to find the correct answer. The closing date for entries to Puzzle No 113 is July 13.

The Hackers


So, you run a slaughterhouse, ...thats nice...
JOE'S BUSINESS SOFTWARE
Well, don't worry, you're in luck...
Here's the answer to all your problems... VISI-KNACKER


PANDEMONIUM AT THE OFFICES OF AUTOMATA U.K. LTD...
COME ON, CAROL, WHAT HAVE YOU DONE WITH IT?
I TELL YOU, I HAVEN'T SEEN IT! YOU'LL HAVE TO ASK GREMLIN!
MEL 'OUT-OF-HIS-TREE' CROUCHER, INVOLVED IN BIG SECRET PROJECT...
PLIP THRUP
HERE HE IS!
HALLO, BLOKES AND BLOKE-ESS! I'VE BROUGHT ME SHOVEL!
SHOVEL? WHAT FOR?
TO DIG THROUGH THE THOUSANDS OF PIMANIACS LETTERS!
SPROING
FIRST, WE WANT TO KNOW WHY THERE'S NO ORDER FORM.
THERE IT IS, LOOK. I'VE STUCK IT DOWN-STAIRS FOR THIS WEEK.
OH, HAVE YOU NOW!
RIGHT! I'M READY TO DEAL WITH ALL THESE LETTERS! DRAG IN THE MAIL-SACK!! IT SHOULD ONLY TAKE A FEW DAYS...
ER - THIS IS IT.
THIS!?... IS IT!?
HI GANG! OH! HI, PORKY! WHAT ARE YOU DOING HERE?
TELL YOU WHAT I'M DOING HERE - I'VE SACRIFICED MY VALUABLE TIME TO COME AND SORT OUT YOUR FAN MAIL. AND LOOK AT IT! ONE LETTER!
NO SKIN OFF MY NOSE, SAPS. WHERE'S ME COFFEE?
GRR! THERE WILL BE SOME SKIN OFF YOUR NOSE IN A MINUTE, YOU UNGRATEFUL LITTLE NUDIST!
STRUGGLE
SWIPE!
BOYS! BOYS!
TICKLE TICKLE
HA HA! YOU AND WHOSE ARMY, FOUR-EYES? COOCHIE COOCHIE COO!
STOPPIT! HAHAHAHAHAHo
PHANTOM TICKLER STRIKES AGAIN! GIVE IN?
YEAH! YEAH!


EEEK! AH HAHA HA!
WELL, I SUPPOSE I HAD BETTER GET THE GANG TOGETHER TO TELL NON-PIMANIACS WHAT THEY'RE MISSING. WILL YOU GET ON THE BLOWER TO CLAIR, RASTAPIMAN, UNCLE ARNOLD AND SWETTIBITZ?
HMM. I KNOW ONE LITTLE PIMAN WHO DOESN'T PAY THE TELEPHONE BILL.
OOOH HOO HOOooo...
PIMAN
THINK AGAIN, SUGAR - IF IT WASN'T FOR ME, THOSE GUYS WOULDN'T HAVE A TELEPHONE ..... AND DON'T CALL ME BILL!
Gremlin (Laughing Boy) Evans
AND NOW... THE POINT OF THIS WEEKS AD...
JOIN THE PIMANIACS
... IT ISN'T JUST KIDS STUFF!!
GET 20% OFF ALL AUTOMATA GOODIES!!
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